VOLUME XI FEBRUARY 1918 NUMBER 2

Southern Medical Journal

Journal of The Southern Medical Association

TABLE OF CONTENTS

MEDICINE—Internal Diseases, Pediatrics, Neurology, Diagnostic Methods, etc.

A Consideration of the Present Outlook on Tuberculin Therapy. Paul H. Ringer, Asheville, N. C. 83

Fundamentals of Vaccine Therapy. Estill D. Holland, Hot Springs, Ark. 87

The Value of Triple Typhoid Vaccine in Civil as Well as Military Life. Randolph Lyons, New Orleans, La. 89

Papers of Drs. Holland and Lyons discussed by J. E. Paullin, Atlanta, Ga.; E. C. Thrash, Atlanta, Ga.; W. L. Dunn, Asheville, N. C.; Deering J. Roberts, Nashville, Tenn.

The Natural Starting Point of All Rational Medical Thought. J. C. Johnson, Atlanta, Ga. 94

Some Manifestations of Malaria Relative to Digestive Disturbances. J. E. Knighton, Shreveport, La. 98

Discussed by S. K. Simon, New Orleans, La.; Anthony Bassler, New York, N. Y.; John L. Jelks, Memphis, Tenn.

AUTHORS' ABSTRACTS: What the American Soldier Now Fighting in France Should Know About Tuberculosis, S. Adolphus Knopf, New York, N. Y. The Explanation and Meaning of the Babinski Sign, Meyer Solomon, Chicago, Ills. The Roentgen Ray Treatment of Acne Vulgaris, H. H. Hazen, Washington, D. C. The Four Plus Wassermann, D. M. Kaplan, New York, N. Y. Students' Health Insurance at the University of California, Robert T. Legge, Berkeley, Cal. Botulism: The Danger of Poisoning from Vegetables Canned by the Cold-Pack Method, Ernest C. Dickson, San Francisco, Cal. Summer Diarrhea, V. E. Lawrence, Ottawa, Kansas 100

(Concluded on next page)

BOOKS BY NEW ORLEANS MEN

LOCAL ANESTHESIA

Local and Regional Anesthesia. By Carroll W. Allen, M.D., Instructor in Clinical Surgery, Tulane University of La. With an Introduction by Rudolph Matas, M.D., Professor of Surgery, Tulane University of La. Octavo of 625 pages, 255 illustrations. Cloth $6.50.

This is a complete work on the subject. You get the history of local anesthesia, a chapter on nerves and sensation, giving particular attention to pain; a chapter on osmosis and diffusion. Special attention is given to cocain and novocain.

PRACTICAL MATERIA MEDICA, Etc.

Practical Materia Medica and Prescription Writing. By O. W. Bethea, M. D., Ph.G., F. C. S. Assistant Professor of Materia Medica and Instructor in Prescription Writing, Tulane University of Louisiana. Royal octavo, over 500 pages, 100 figures. Cloth $4.50.

The author had compiled in the first part of the work a very satisfactory resume of the Materia Medica. In the second part of the volume we find a most common-sense and practical demonstration of prescription writing. Every point, with reference to compatibility, arrangement, forms and administration, is carefully considered.—"The Boston Medical & Surgical Journal."

THE ART OF MEDICINE—And Other Addresses, Papers, Etc.

By Isadore Dyer, PhB., M.D., Dean and Professor of Diseases of the Skin, Tulane University of Louisiana. 208 pages. Cloth $1.00.

J. A. MAJORS COMPANY NEW ORLEANS, LA. DALLAS, TEXAS

Chicago Laboratory, 25 East Washington Street, Chicago, Illinois, see page 24

TABLE OF CONTENTS—Concluded

TROPICAL DISEASES AND PUBLIC HEALTH

The Relative Value of the Public Health Nurse in the Solution of the Tuberculosis Problem. W. L. Heizer, Frankfort, Ky. 103

Discussed by G. G. Altman, Helena, Ark.; Alva Carnes, Dallas, Tex.; James A. Hayne, Columbia, S. C.; John A. Ferrell, New York, N. Y.; Paul H. Ringer, Asheville, N. C.; A. T. McCormack, Bowling Green, Ky.; H. R. Carter, Baltimore, Md.; L. B. McBrayer, Sanatorium, N. C.

Medical Inspection of Schools in North Carolina. George M. Cooper, Raleigh, N. C. 112

Discussed by B. E. Washburn, Raleigh, N. C.; James P. Faulkner, Atlanta, Ga.; John J. McKenna, Philadelphia, Penn.

Medical Supervision of Employees in Large Industries. J. A. Gentry, Atlanta, Ga. 115

Discussed by Martin E. Taber, Dallas, Tex.; Chas. L. Minor, Asheville, N. C.

AUTHORS' ABSTRACTS: **The Soil Pollution Problem,** Victor G. Heiser, New York, N. Y. **Some Ancient Health Laws of the Jews,** Joseph H. Marcus, Atlantic City, N. J. 119

SURGERY—War, Railway, Industrial, Gynecological, Obstetrical and Urological.

Recent Progress in the Treatment of Cancer of the Prostate, Seminal Vesicles and Bladder. Hugh Hampton Young, Baltimore, Md. 120

Tumors of the Urinary Bladder. E. S. Judd and S. W. Harrington, Rochester, Minn. 129

Discussed by R. L. Sanders, Memphis, Tenn.; Bransford Lewis, St. Louis, Mo.; John R. Caulk, St. Louis, Mo.

Interpretation of Lumbo-Sacral Backache in Women. Edw. H. Richardson, Baltimore, Md. 139

Discussed by George Bennett, Baltimore, Md.; W. S. Gardner, Baltimore, Md.; M. Y. Dabney, Birmingham, Ala.

Blood Transfusion in Emergency Surgery—Sodium Citrate—Indirect Method. Edward T. Newell, Chattanooga, Tenn. 145

Discussed by J. S. Wilkins, Paducah, Texas; Jere L. Crook, Jackson, Tenn.

AUTHORS' ABSTRACTS: **The Mucosa of the Rectum and Sigmoid Colon as a Focus of Infection,** Horace W. Soper, St. Louis, Mo. **Complete vs. Incomplete Hysterectomy,** E. L. King, New Orleans, La. **Transplantation of Fat, Fascia and Living Tissue in Surgery: a Report of Experiences in Various Conditions,** Allen B. Kanavel, Chicago, Ills. **Clinical Observations on Mammary Neoplasms,** J. Garland Sherrill, Louisville, Ky. **Blood Transfusion in the Anemias,** Marvin L. Graves, Galveston, Texas. **The Surgery of Cystocele, Rectocle and Procidentia Uteri,** A. L. Blesh, Oklahoma City, Okla. 148

EYE, EAR, NOSE AND THROAT

Late Infection after Elliot Operation Not Always Fatal. M. Feingold, New Orleans, La. 150

Tests by the Baranay Method. John J. Shea, Memphis, Tenn. 152

Discussed by W. Likely Simpson, Memphis, Tenn.; J. B. Greene, Asheville, N. C.; John Franklin Rowland, Hot Springs, Ark.

AUTHORS' ABSTRACTS: **The Use of Non-Specific Protein in Ophthalmology,** T. J. Dimitry, New Orleans, La. **Tuberculosis of the Retinal Vessels with Recurring Hemorrhages and Proliferating Retinitis,** Frank B. Spencer, Boulder, Colo. **Strabismus or Squint: Its Treatment by Glasses,** James J. Pattee, Pueblo, Colo. 156

SPECIAL ARTICLE

Regulations for Local Boards in Examinations for the Next Draft. 158

EDITORIALS 164

Our Service.
Abuse of Pituitary Extract.
Conservation of Pharmaceuticals.
Major Theodore Caldwell Janeway—In Memoriam.
Colonel Goodwin.
Woman's Opportunity in Medicine.
Postal Rates and Medical Journals.

BOOK REVIEWS 170

SOUTHERN MEDICAL NEWS 171

"It is an apparent paradox, but a great truth, that the present war, the most destructive to mankind, has given us more constructive knowledge in medicine and surgery than could have been acquired by years of research under normal conditions. It is not inconceivable to believe that during the next generation more lives will be saved through what the war has taught us than will be lost in the entire conflict.

"Wholesale destruction has taught us how to save; from unnumbered wounds and injuries we have procured a wider knowledge of healing; from the great loss of life we have discovered new methods of preserving it. Every physician and surgeon owes it to himself and the profession to utilize this newly acquired knowledge in his own work."

Medical and Surgical Therapy

As Developed in Modern Warfare and the Application to Civil Practice

Three years of war have added more to medical and surgical knowledge than a decade of peace could have done.

The thousands — hundreds of thousands — of cases have revolutionized nearly every branch of medicine and surgery to a greater or less degree. Pre-war knowledge can only be regarded as a foundation on which to build. In many fields it is practically obsolete in the light of the tremendous wealth of information and the actual experience the profession has acquired in the great conflict.

Edited by
SIR ALFRED KEOGH, K.C.B., M.D.
Director General of the British Medical Forces

With a Preface by
WILLIAM C. GORGAS, M.D.
Surgeon General of the United States Army

Some of the Eminent Contributors

M. FEVRIER
Medical Inspector General of the French Army

SIR DAVID BRUCE
H. VINCENT
J. BABINSKI
SIR ARBUTHNOT LANE
COLONEL ANDREW BALFOUR
AUGUST BROCA
PIERRE MARIE
J. D. ROLLESTON
G. ROUSSY
J. L. FAURE
FELIX LAGRANGE
And Many Others of Equal Note

THIS IS AN APPLETON BOOK

To bring the knowledge before the physicians and surgeons of America, gained through their war experiences, the most eminent medical men of England and France have collaborated to produce this great work.

For the first time in history, expert physicians, surgeons, bacteriologists, pathologists—in fact, all branches of the profession and related professions—have been able to work together under conditions that have brought tremendous results.

In clear, concise English, Medical and Surgical Therapy covers the ground thoroughly.

Mail this coupon for complete information

D. APPLETON & COMPANY
35 W. 32d St. - - New York

Please send without charge complete information regarding

MEDICAL AND SURGICAL THERAPY

So.2-18

Name.....

Address.....

City.....

SAINT ELIZABETH'S HOSPITAL

617 West Grace Street, **RICHMOND, VIRGINIA**

A thoroughly equipped and modern private hospital for surgical and gynecological patients. Absolutely fire-proof—a desirable requirement in any building, but a necessity in a surgical hospital. Constructed of tapestry brick, Pennsylvania brown stone, and reinforced concrete. Location is excellent, very quiet, but accessible. The building is half a block from the Franklin street side of Monroe Park. Ventilation perfect—due to the general design of architect, who is an authority on ventilation, and also to the patent Austral windows, which direct the air current towards the ceiling and not on the patient.

Only graduate nurses are employed.

All modern conveniences, such as silent electric light signals for patients and long distance telephone connection in every bedroom.

Two large and complete operating rooms with northern light are on the top floor, where they are practically free from dust. The hospital is open the entire year. No wards, only single or double rooms, with or without private bath.

An addition to St. Elizabeth's Hospital containing 18 beds has recently been completed, which makes a total capacity of 48 beds. The addition is of the same general construction as the original building.

A limited number of graduate nurses received for post-graduate instruction.

For information, apply to the Superintendent, MISS MYRA E. STONE, R. N., or to

J. SHELTON HORSLEY, M. D., Surgeon-In-Charge.

ARTHUR S. BRINKLEY, M. D., Associate Surgeon.

SOUTH MISSISSIPPI INFIRMARY

ORGANIZED 1901 HATTIESBURG, MISS.

W. W. CRAWFORD, M. D., SURGEON-IN-CHIEF

SURGICAL AND MEDICAL

CURRAN POPE A. THRUSTON POPE

A MODERN up-to-date, private Infirmary equipped with steam heat, electric lights, electric fans, modern plumbing and superior furnishings. Solicits all cases of functional and organic nervous diseases, diseases of the stomach and intestines, rheumatism, gout and uric acid troubles, drug habits and alcoholism. Bed-ridden cases not received without previous arrangement.

Hydrotherapy, Mechanical Massage, Static, Galvanic, Faradic, Sinusoidal, High Frequency, Leucodescent and Arc Light, and X-ray treatments given by competent physicians and nurses, under the immediate supervision of the Medical Superintendent. Special laboratory facilities for diagnosis by urine, blood, blood serum, sputum, gastric juice, duodenal tube and X-ray. Recreation hall with pool and billiards for free use of patients.

Rates include treatment, board, medical attention and general nursing. The Sanatorium is supplied from Pope Farm with vegetables, fruit, poultry, and eggs, also milk, cream, butter and buttermilk from its herd of registered Jerseys.

THE POPE SANATORIUM

Long Distance Phones CUMB. M. 2122 HOME 2122

(Incorporated Established 1880)

LOUISVILLE, KENTUCKY 115 West Chestnut St.

CHESTNUT LODGE

Rockville, Maryland

Near Washington, D. C. Baltimore & Ohio Railroad and Electric Line from Washington

This sanitarium under experienced management offers superior advantages for the treatment of patients suffering from Nervous and mild Mental Diseases, and for elderly persons needing skilled care and nursing; combining the equipment of a modern Phycopathic Hospital with the appointments of a refined home. The Hydrotherapy Department is complete in every detail including the Nauheim Baths for Arteriosclerosis, Heart and Kidney Diseases.

DR. E. L. BULLARD, Physician-in-Charge

THE DAVIS INFIRMARY

J. D. S. DAVIS, M. D.

BIRMINGHAM - - - ALABAMA

FOR SURGICAL AND GYNECOLOGICAL CASES AND HOSPITAL TRAINING SCHOOL FOR NURSES

APPALACHIAN HALL :—: ASHEVILLE, N. C.

DR. LOUIS G. BEALL
DR. BERNARD R. SMITH
Physicians in Charge
Miss V. E. Lively
Supt. of Nurses

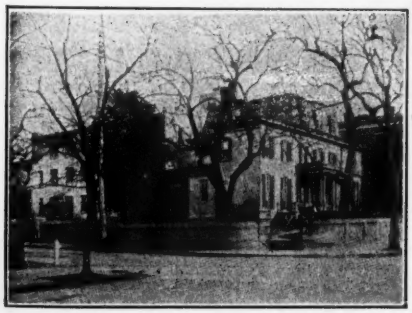
AN INSTITUTION FOR THE TREATMENT OF NERVOUS DISEASES

ADVISORY BOARD
Dr. C. V. Reynolds
Dr. M. H. Fletcher
Dr. C. L. Minor
Dr. W. L. Dunn

We have recently erected two additional buildings, thoroughly equipped with every modern convenience, including a most complete Hydrotherapy Department.

Situated at an altitude of 2500 ft. in the heart of the Blue Ridge Mountains of Western North Carolina. Superb lawn and 25 acres of beautifully wooded grounds.

For information address DRS. BEALL & SMITH, ASHEVILLE, N. C.



The Tucker Sanatorium, Inc.

Madison and Franklin Streets
RICHMOND, VIRGINIA

This is the Private Sanatorium of Dr. Beverley R. Tucker

The Tucker Sanatorium is for the treatment of nervous diseases. Insane and acute alcoholic cases are not taken. The Sanatorium is large and bright, surrounded by a lawn and shady walks and large verandas. It is situated in the best part of Richmond and is thoroughly and modernly equipped. There are departments for massage, medicinal exercises, hydrotherapy, occupation and electricity. The nurses are especially trained in the care of nervous cases.

Patronize our advertisers—mention the Journal when you write them.

LYNNHURST SANITARIUM

A HIGH-CLASS INSTITUTION FOR NERVOUS DISEASES, MILD MENTAL DISORDERS AND DRUG ADDICTION.

Situated in the suburbs of Memphis on 28 acres of beautiful woodland and ornamental shrubbery. Modern and approved methods in construction and equipment. Thorough ventilation, sanitary plumbing, low pressure steam heat, electric light, fire protection, and an abundance of pure water. Special facilities for giving Hydrotherapy, Electrotherapy, Massage, Physical Culture and Rest Treatment. Experienced nurses and house physician. An improved treatment for Opium-Morphin addiction.

S. T. RUCKER, M.D., Supt., Memphis, Tenn.

Office Goodwyn Institute, Phone Main 2616. Sanitarium Phone, Hemlock 91

THE POTTENGER SANATORIUM FOR DISEASES OF THE LUNGS AND THROAT

MONROVIA, CALIFORNIA

A thoroughly equipped institution for the scientific treatment of tuberculosis. High class accommodations. Ideal all-year-round climate. Surrounded by orange groves and beautiful mountain scenery. Forty-five minutes from Los Angeles. F. M. Pottenger, A.M., M.D., LL.D., Medical Director. J. E. Pottenger, A.B., M.D., Assistant Medical Director and Chief of Laboratory. George H. Evans, M.D., San Francisco, Medical Consultant. For particulars address:

POTTENGER SANATORIUM,
Monrovia, California

Los Angeles Office: 1100-1101 Title Ins. Bldg., Fifth and Spring Streets

WAUKESHA SPRINGS SANITARIUM

For the Care and Treatment of

NERVOUS DISEASES

Building Absolutely Fireproof

BYRON M. CAPLES, M. D., Supt.

Waukesha, - - - - Wisconsin

HIGH OAKS---Dr. Sprague's Sanatorium

Nervous and mental diseases and liquor and drug addictions treated. Constant medical oversight and skilled nursing. New buildings, a complete hydro-therapeutic equipment, electricity, vibration, massage and all other approved methods of treatment. Sanatorium situated just outside the city limits, a half mile south of former location, on same street, South Broadway. Physicians wishing to send patients may telephone at Sanatorium's expense.

Address GEORGE P. SPRAGUE, M. D., Lexington, Kentucky

Robertson-Blackman Sanitarium

172 Capitol Avenue Atlanta, Georgia

Disorders of Nutrition and Elimination

Hydrotherapy; Dietetics; The Milk and Rest Cure; Medical, Electrical and Mechanical Therapy.

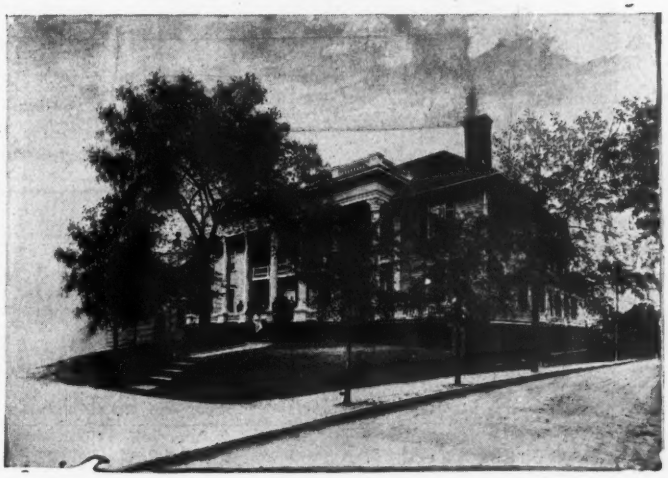
The Allen Treatment of Diabetes.

Cheerful atmosphere, all modern conveniences and good cuisine. Extensive therapeutic equipment.

Laboratory facilities.

For information and literature, address:

W. W. BLACKMAN, M.D., Superintendent

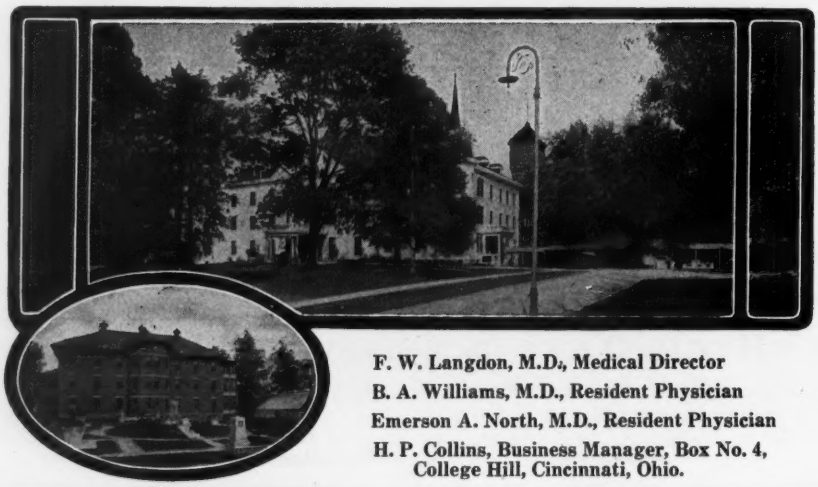


CINCINNATI SANITARIUM

INCORPORATED 1873

FOR MENTAL AND NERVOUS DISEASES

A strictly modern hospital fully equipped for the scientific treatment of all nervous and mental affections. Situation retired and accessible. For details write for descriptive pamphlet.



F. W. Langdon, M.D., Medical Director
B. A. Williams, M.D., Resident Physician
Emerson A. North, M.D., Resident Physician
H. P. Collins, Business Manager, Box No. 4, College Hill, Cincinnati, Ohio.

PETTEY & WALLACE SANITARIUM

958 S. Fifth Street
MEMPHIS, TENN.

FOR THE TREATMENT OF

Drug Addiction, Alcoholism, Mental and Nervous Diseases

A quiet, home-like, private, high-class institution. Licensed. Strictly ethical. Complete equipment. Best accommodations.

Resident physician and trained nurses.

Drug patients treated by Dr. Pettey's original method under his personal supervision.

Detached building for mental patients.

BIRMINGHAM INFIRMARY

BIRMINGHAM, ALABAMA

SURGICAL DEPARTMENT MEDICAL DEPARTMENT
RADIUM DEPARTMENT X-RAY DEPARTMENT
PATHOLOGICAL DEPARTMENT

DR. W. C. GEWIN, PRES. **MRS. B. GOLIGHTLY, SUPT.**

THE HENDRICKS SANATORIUM

For All Forms of Tuberculosis

EL PASO - - - - - TEXAS

WE USE THE LATEST, APPROVED THERAPEUTIC METHODS

Highest Class Accommodations
Fireproof Construction
Buildings Overlooking Mt. Franklin

All Rooms with Bath and
Private Sleeping Porch
Hot and Cold Running Water

Sanatorium Altitude	4,000	feet
Rainfall	9.12	inches
Sunshiny Days	336	
Max. Temperature	94	degrees —In July
Min. Temperature	31.6	degrees —In December
Mean Temperature	62.3	degrees Average for twelve months

(STATISTICS FROM U. S. WEATHER BUREAU)

Rates: $30.00 per Week--NO EXTRAS

For further particulars address Medical Director

C. M. Hendricks, M. D., Medical Director
J. W. Laws, M. D., Associate Med. Dir.

M. R. Harvey, President
W. W. Britton, M. D., Ass't. Phys.

The Baker Sanatorium

Colonial Lake
Charleston, S. C.

A new and thoroughly equipped hospital for the care of Surgical patients.

ARCHIBALD E. BAKER, M. D
Surgeon in Charge

J. C. KING, M.D.
GUY B. DENIT, M.D.

ST. ALBANS SANATORIUM, Inc.

Long Distance Phone 75
P. O. BOX 84

RADFORD, VIRGINIA

The Hydrotherapy Department is complete in every detail. Continuous, Nauheim and Tonic Baths.

Special emphasis given to Rest, Diet, Occupation, Massage and Electricity.

Clinical Laboratory fully equipped.

A thoroughly equipped and modern Private Sanatorium for the diagnosis and treatment of chronic medical, nervous, and mild mental disorders. It is situated 2,000 feet above sea level in the famous blue grass region of Virginia. There are two large colonial brick buildings connected by a sun parlor 105 feet long. Rooms single or en suite, with or without private baths. Accommodations for fifty patients. Modern and approved methods used in every department. The nurses are specially trained to care for nervous patients.

For details write for descriptive pamphlet.

Shortle's Albuquerque Sanatorium

FOR TUBERCULOSIS

ALBUQUERQUE, - - NEW MEXICO

Altitude 5,100 Feet. Rates Moderate. Climatic Conditions Unsurpassed

A private sanatorium where the closest personal attention is given each patient. Complete laboratory and X-Ray equipment for diagnostic purposes. Compression of the lung and sun-bath treatment after the method of Rollier. Steam heat, hot and cold water, electric lights, call bells, local and long distance telephones and private porches for each room. Bungalows if desired.

Situated but 1 1-2 miles from Albuquerque, the largest city and best market of New Mexico, permits of excellent meals and service at moderate price. **Write for Booklet B.**

A. G. Shortle, M.D., Medical Director

DIXON HEALTH RESORT

HENDERSONVILLE, NORTH CAROLINA

In the Blue Ridge Mountains of Western North Carolina—Altitude 2250 feet—On main line of Southern railroad between Spartanburg, S. C., and Asheville, N. C.

A MODERN SANITARIUM

(Granite Building Absolutely Fire Proof)

For the care and treatment of Diseases of the Nervous System, Heart, Kidneys, Rheumatism, High Blood Pressure, Chronic Invalidism, Convalescents, Rest Cure Cases and for those who are not sick, but need to get away from the worry of business and society.
No contagious or otherwise objectionable cases admitted.

GUY E. DIXON, M. D., Owner and Manager

HENDERSONVILLE, - - - - - - - - - - - - - NORTH CAROLINA

THE WATAUGA SANITARIUM

RIDGETOP, TENNESSEE

19 Miles North of Nashville, Henderson Division of L. & N. Ry.

For Tuberculosis in Any Form

STAFF

Dr. Wm. Litterer
Dr. W. A. Bryan
Dr. O. N. Bryan
Dr. G. C. Savage
Dr. J. M. King
Dr. R. Boyd Bogle

LOCATION IDEAL, elevation 1,000 feet, buildings modern; hot and cold running water; lighted with gas; perfect sewerage and excellent water supply. The Sanitarium operates its own dairy and truck farms. Tuberculins and vaccines administered in suitable cases. **Rates very reasonable. X-Ray diagnosis. Heliotherapy modified after method of Rollier.**

THE WATAUGA SANITARIUM

Dr. C. A. ROBERTSON, Medical Director **RIDGETOP, TENNESSEE**

Westbrook Sanatorium, Richmond, Virginia

THROUGH THE MEDICAL STAFF,

DOCTORS JAS. K. HALL, P. V. ANDERSON AND E. M. GAYLE

WISHES TO ANNOUNCE TO THE PROFESSION THE OPENING ON NOVEMBER FIFTEENTH OF AN ADDITION TO THE INSTITUTION OF TWO BRICK BUILDINGS—ONE FOR MEN AND ANOTHER FOR WOMEN.

THE PLANT now consists of nine separate buildings situated in the midst of grounds which embrace eighty-five acres. The lawn is large and beautifully shaded; there are private walks and drives, and the institution affords the quietness and serenity of the country within sight of the city.

Rooms may be had single or en suite, with or without private baths. Small cottages, suitable for one patient, are also available.

Treatment is limited to Nervous Disorders, Mild Mental Affections, and to Alcoholic and Drug Habituation. Nurses and attendants are trained for this special work and the Sanatorium furnishes every facility for the rational treatment of such patients.

Life in the out-of-doors, combined with properly selected work for each patient, constitutes an important therapeutic measure.

The three physicians live at the Sanatorium and devote their entire attention to the patients.

BOOKLET UPON REQUEST

NEW MEXICO COTTAGE SANATORIUM

E. S. BULLOCK, M.D.
Physician-in-Chief

WAYNE MacVEAGH WILSON, Manager

For the treatment of

TUBERCULOSIS

No region in the world equals the high altitude section of the southwestern portion of the United States for the treatment of tuberculosis. And of all the cities and towns in this section, SILVER CITY stands pre-eminent as a health resort.

Wonderful all-year-round climate. Moderate winters. Cool summers. Over three hundred days of sunshine each year. Hemorrhages rare. Night sweats unknown.

Splendidly equipped institution. Tuberculin in selected cases. Artificial pneumothorax. Heliotherapy. X-Ray. Rates for Ambulant Patients moderate. No extras.

Write for Descriptive Booklet C.

SILVER CITY, NEW MEXICO

DR. J. F. YARBROUGH'S SANATORIUM

COLUMBIA, ALABAMA

For the Special Treatment of PELLAGRA, "BRIGHT'S DISEASE" DYSPEPSIA AND INDIGESTION

TRAINED NURSES

CONSULTING STAFF

M. S. DAVIE, M.D., Dothan, Ala.
ALFRED SMITH FRASIER, F.A.C.S., Dothan, Ala.
ROSS MOOTY, B.S., M.D., Columbia, Ala.
HENRY GREEN, M.D., Dothan, Ala.

ST. LUKE'S HOSPITAL

Richmond, Va.

Personally conducted by Dr. Stuart McGuire for the Accommodation of his Surgical Patients.

MOUNTAIN PARK SANATORIUM

For the treatment of Tuberculosis. Seventy-five miles northwest, and twelve hundred feet higher than San Antonio. Very dry the year round. Mild winters, cool, breezy summers. Hospital building and hollow tile cottages with modern conveniences. Beautiful mountain scenery. Prices moderate. Trained nurses.

SAM E. THOMPSON, M.D.
(Former Medical Director of State Tuberculosis Sanatorium at Carlsbad)
Superintendent and Medical Director

W. H. CHAMBERS, Business Manager
KERRVILLE, TEXAS

Dr. Watson's Sanitarium

CHICAGO, ILLINOIS

For the Treatment of GOITER and Diseases of the Glands of Internal Secretion.

LEIGH F. WATSON, M.D., Medical Director
Office: Michigan Boulevard Building
30 North Michigan Avenue

RADIUM THERAPY

in connection with

NEWELL & NEWELL Sanitarium

705-707 Walnut St., Chattanooga, Tenn.

An ample supply of Radium for the treatment of all conditions in which Radium is indicated.

SANITARIUM STAFF

E. T. Newell, M.D.
E. D. Newell, M.D.
G. P. Haymore, M.D.
J. H. St. John, M.D.

City View Sanitarium

(Established 1907)
JOHN W. STEVENS, M.D.,
Physician-in-Charge
Telephone Main 2928
Rural Route No. 1 Nashville, Tennessee

For the Treatment of MENTAL and NERVOUS DISEASES and ADDICTIONS.

New Fifty-Room Department completed January, 1915. Now have two new buildings. One for each sex. A thoroughly modern and fully equipped private hospital, operating under state license. Large commodious buildings offering accommodations to meet the desires of the most exacting. Situated out of town in a quiet, secluded place. Large shady grounds. Specially trained nurses. Two resident physicians. Capacity 65. References: Medical Profession of Nashville.

DOWNEY HOSPITAL

A new, modern, up-to-date two-story building with roof garden, equipped with steam heat, electric lights, electric signal system and new furnishings. All rooms outside, with or without private bath; hot and cold water in each. Fully equipped sterilizing and operating rooms. Patients admitted suffering from Gynecological, Obstetrical, Abdominal and General Surgical conditions. Limited number of medical cases accepted. No contagious, alcoholic or mental cases admitted. Trained graduate nurses and excellent training school. For further information, address

DOWNEY HOSPITAL, Gainesville, Ga.

Virginia-Carolina Sanitarium, Inc

403 Manteo St., Norfolk, Va.

A private home-like Sanitarium for the care and treatment of Medical, Mild Mental Cases, Alcoholic and Drug Habitutes and all forms of Neurasthenia. Beautifully located in the heart of the city. Modern equipments. No suffering.

Terms moderate. Correspondence confidential.

J. A. STRICKLAND, M. D., Pres.
CHAS. E. FLOWERS, M. D., Sec.

TUBERCULOSIS

ALBUQUERQUE, NEW MEXICO

Climatic Conditions Unsurpassed. Altitude 5000 feet. In the LAND OF SUNSHINE. Experienced Medical Supervision. Trained Nurses in Constant Attendance. All Approved Therapeutic Measures Employed.

The Murphey Sanatorium

A High-Class Institution for the Treatment of Tuberculosis. Forty rooms—Ten with private bath—Thirty with bath between each two rooms. Every Room has a Private Sleeping Porch. Located in the midst of beautiful Mountain Scenery. Descriptive Booklet and full information mailed on request.

Rates $18.50 to $35.00 per week. No extras

THE MURPHEY SANATORIUM

ALBUQUERQUE, NEW MEXICO

W. T. MURPHEY, M.D., Consultant — DAVID A. SPEAR, M.D. Medical Director
MRS. HATTIE SOWER, Supt.

Glenwood Park Sanitarium, Greensboro, North Carolina

SUCCEEDING TELFAIR SANITARIUM

The Glenwood Park Sanitarium is ideally located in a quiet suburb of Greensboro, having all the advantages of the city, yet sufficiently isolated to enable our patients to enjoy restful quietude and entire freedom from the noise and distractions incident to city life.

CLASS OF PATIENTS—Those who need help to overcome the bondage of habit. Rest from overwork, study or care. Diversion for the depressed and disquiet mind—and such as are suffering from any disease of the nervous system. The treatment consists of the gradual breaking up of injurious habits, and the restoration to normal conditions, by the use of regular and wholesome diet, pure air, sunlight, and exercise, with such other remedies as are calculated to assist nature in the work of restoration.

Special attention is given to the use of electricity. Twenty years' experience has proven it invaluable in cases of nervous prostration, incipient paralysis, insomnia, the opium and whiskey habits, and those nervous affections due to uterine or ovarian disorders.

For further particulars and terms, address **W. C. ASHWORTH, M. D., Superintendent.**

Dr. Brawner's Sanitarium

ATLANTA, GEORGIA

For Nervous and Mental Diseases, General Invalidism and Drug Addictions

The sanitarium is located on the Marietta trolley line, 10 miles from center of city, near a beautiful suburb, Smyrna. Grounds consist of 80 acres. Buildings are steam heated, electrically lighted, and many rooms have private baths. Patients have many recreations such as tennis, croquet, baseball and automobiling. Reference: The Medical Profession of Atlanta. Address

Dr. JAS. N. BRAWNER,
701-2 Grant Bldg. Atlanta, Ga.

NASHVILLE PRIVATE MATERNITY HOSPITAL

ADDRESS:
MRS. L. SWEENEY, 4600 Idaho Ave., NASHVILLE, TENN.

PRIVATE HOME FOR UNMARRIED PREGNANT WOMEN WITH EVERY FACILITY FOR THEIR CARE AND PROTECTION.

GLOCKNER SANATORIUM

NORTH TEJON
COLORADO SPRINGS, COLO.

CLIMATE
CARE
COMFORTS

For Pulmonary Cases

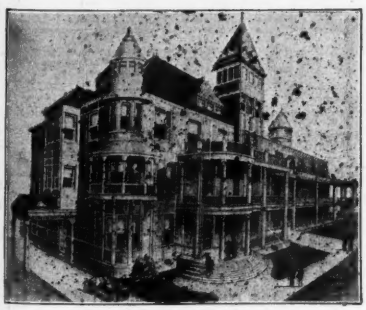
FOUNDED IN 1889.

South Front

A $300,000 Sanatorium with surgical annex, modern buildings and equipment. Located amid scenic grandeurs. For 25 years successfully engaged in caring for the health-seeker. Rates $15 to $35 per week. Write for catalog, mentioning this Journal.

HIGHLAND SANITARIUM

NASHVILLE, TENNESSEE



FOR THE TREATMENT OF

Nervous and Mild Mental Disorders, General Invalidism and the Addictions.

Under the Supervision of Dr. A. E. DOUGLAS, former Superintendent of the Central Tennessee State Hospital, assisted by a Staff of Fifteen of Nashville's Most Eminent Physicians.

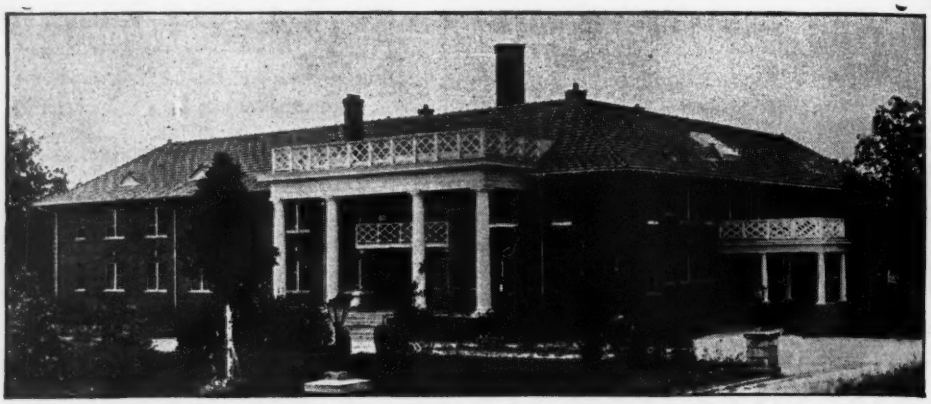
Situated in suburbs of Nashville, three miles from heart of city on Murfreesboro Pike in midst of 10 acres of beautiful blue grass woodland and ornamental shrubbery.

A quiet, homelike, strictly ethical, splendidly equipped hospital for patients of this character, operating under state license and in charge of a successful and widely known physician who has given his entire professional life to the study of ways and means of relieving and curing these unfortunates.

Number of patients limited, assuring personal attention of Superintendent Special facilities installed at an enormous cost for giving hydrotherapy, electrotherapy, massage, baths and rest treatment. *Address:*

HIGHLAND SANITARIUM

Telephone Main 1826 R. F. D. 7, Nashville, Tenn.



THE CHESTON KING SANITARIUM

A Private Sanitarium for Nervous and Mental Diseases, Alcoholic and Narcotic Inebriety

Careful attention to proper classification of cases. Modern conveniences and accommodations. Facilities excellent. Electricity, Hydrotherapy, Massage and Occupation. Site elevated, retired and beautiful. Twenty-five acres in lawn and garden. Situated between the Capital City Country Club and Greater Oglethorpe University. Patients admitted to our sanitarium can have all the rest and exercise indicated and yet will not come in contact with any objectionable case. A physician in constant attendance. Mail address

THE CHESTON KING SANITARIUM, Peachtree Road, Atlanta, Georgia

OCONOMOWOC HEALTH RESORT

OCONOMOWOC
WISCONSIN

New Building Absolutely Fireproof

For Nervous and Mild Mental Diseases and Addiction Cases

Five minutes walk from Interurban between Oconomowoc and Milwaukee on main line C. M. & St. P. Ry. 30 miles west of Milwaukee

Built and equipped to supply the demand of the neurasthenic, border-line and undisturbed mental case, for a high-class home free from contact with the palpably insane, and devoid of the institutional atmosphere.

Forty-one acres of natural park in the heart of the famous Wisconsin Lake Resort region. Rural environment, yet readily accessible. A beautiful country in which to convalesce.

The new building has been designed to encompass every requirement of modern sanitarium construction, the comfort and welfare of the patient having been provided for in every respect. The bath department is unusually complete and up-to-date.

Number of patients limited, assuring the personal attention of the resident physician in charge.

Arthur W. Rogers, B.L., M.D., Resident Physician in Charge

OXFORD RETREAT

OXFORD, OHIO

Nervous and Mental Diseases
Alcohol and Drug Addictions
FOR MEN AND WOMEN

96 Acre Lawn and Forest. Buildings Modern and First Class in all Appointments. Thoroughly Equipped. Of Easy Access—39 Miles From Cincinnati, on C. H. & D. R. R. 10 Trains Daily.

THE PINES

An Annex for Nervous Women

Write For Descriptive Circular

R. HARVEY COOK, M.D., Physician-in-Chief

ARLINGTON HEIGHTS SANITARIUM

P. O. BOX 978, FORT WORTH, TEXAS

For Nervous Diseases, Selected Cases of Mental Diseases, Drug and Alcohol Addictions.

(Incorporated under Laws of Texas)

WILMER L. ALLISON, M.D.
Resident Physician
JAMES D. BOZEMAN, M.D.
Resident Physician
BRUCE ALLISON, M.D.
Resident Physician
JOHN S. TURNER, M.D.,
Consulting Physician

KENILWORTH SANITARIUM

KENILWORTH, ILLINOIS

(Established 1905)

(C. & N. W. Railway. Six miles North of Chicago.)

Built and equipped for the treatment of nervous and mental diseases. Approved diagnostic and therapeutic methods.

An adequate night nursing service maintained. Sound proof rooms with forced ventilation. Elegant appointments. Bath rooms en suite, steam heating, electric lighting, electric elevator.

Resident Medical Staff:
Ella Blackburn, M.D. Sherman Brown, M.D.
Sanger Brown, M.D.

Chicago Office 59 East Madison Street

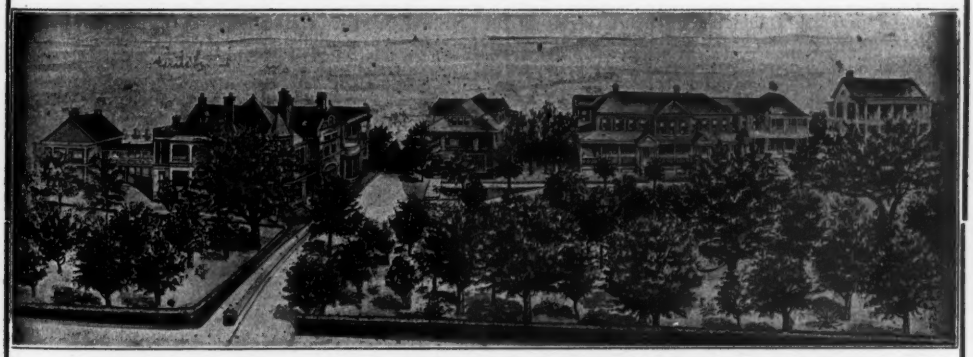
Telephone Rondolph 5794 Hours 11 to 1, by appointment only

All correspondence should be addressed to

Kenilworth Sanitarium **Kenilworth, Ill.**

DR. MOODY'S SANITARIUM

SAN ANTONIO, TEXAS



For Nervous and Mental Diseases, Drug and Alcohol Addictions and Nervous Invalids Needing Rest and Recuperation

Established 1903. Strictly ethical. Location delightful summer and winter. Approved diagnostic and therapeutic methods. Modern clinical laboratory. 7 buildings, each with separate lawns, each featuring a small separate sanitarium, affording wholesome restfulness and recreation, in doors and out doors, tactful nursing and homelike comforts. Bath rooms en suite, 100 rooms, large galleries, modern equipments, 15 acres, 350 shade trees, cement walks, playgrounds. Surrounded by beautiful park, Government Post grounds and Country Club.

G. H. MOODY, M. D., Supt. T. L. MOODY, M. D., Res. Physician J. A. McINTOSH, M. D., Res. Physician

The Golden Springs Sanatorium

FOR THE TREATMENT OF TUBERCULOSIS

Located in the foot hills of the Blue Ridge Mountains, an ideal climate the whole year. An abundance of sunshine, altitude 1800 feet, water obtained from a pure mountain spring situated fifty feet above sanatorium grounds.

A private bungalow for each individual patient.

Twenty dollars per week, includes board and treatment, no extras.

For particulars address

Anniston, Alabama

C. WHITEHEAD, M.D., Res. Physician — *L. R. JONES, Manager*

DR. BARNES' SANITARIUM

STAMFORD, CONNECTICUT

A Private Sanitarium for Mental and Nervous Diseases. Also Cases of General Invalidism. Separate Department for cases of inebriety.

The buildings are modern, situated in spacious and attractive grounds, commanding superb views of Long Island Sound and surrounding hill country. The accommodations, table, attendance, nursing and all appointments are first class in every respect. The purpose of the Institution is to give proper medical care and the special attention needed in each individual case. 50 minutes from Grand Central Station, New York. For terms and illustrated booklet, address F. H. BARNES, M.D., Med. Supt., Telephone 1867.

Medical College of Virginia

UNIVERSITY COLLEGE OF MEDICINE
MEDICAL COLLEGE OF VIRGINIA
(Consolidated)

Medicine-Dentistry-Pharmacy

STUART McGUIRE, M.D., Dean

New college building, completely equipped and modern laboratories. Extensive Dispensary service. Hospital facilities furnish 400 clinical beds; individual instruction; experienced faculty; practical curriculum. For catalogue or information address

J. R. McCAULEY, Secretary
1140 E. Clay Street — Richmond, Virginia

LOYOLA POST-GRADUATE SCHOOL OF MEDICINE

New Orleans, La.

Combining New Orleans Post-Graduate School of Medicine.
Louisiana Post-Graduate School of Medicine.

Offers courses in all branches of medicine and surgery.
Special facilities for courses in the Eye, and the Ear, Nose and Throat.
Faculty numbering over eighty.
Unlimited clinical material in all the hospitals of New Orleans, the medical metropolis of the South.
Students admitted to all courses throughout the year.

JAMES M. BATCHELOR, M.D., President. — JOSEPH A. DANNA, M.D., Secretary.
Address all communications to the Secretary, Suite 716 Maison Blanche Bldg., New Orleans, La.

Patronize our advertisers—mention the Journal when you write them.

New York Polyclinic Medical School and Hospital

341-351 West 50th Street, New York City

General, Separate Clinical and Special Post-Graduate Courses of Individual Instruction given throughout the year, beginning at any time, and for any period of time. *Laboratory, Cadaver and Operative Courses* in all branches. Instruction planned to meet individual requirements. *Courses of Practical Work* under tutelage for periods of three months, six months, one year, for specialists. *Individual Instruction* in the following branches:

Major and Minor Surgery
Hernia (local anesthesia)
Cystoscopy (male and female)
Urethroscopy and Endoscopy
Neurology and Neurological Surgery (brain, spinal cord, peripheral nerves)
Dermatology (skin pathology)
Gynecology (operative; non-operative)
Eye, (including Refraction), Ear, Nose, Throat
Rectal Diseases
Anesthesia
Physical Diagnosis
Infant Feeding and Diagnosis
Tuberculosis (pulmonary, glandular, bone)
Drug Addictions and Toxemias
Diseases of Stomach (dietetics)
X-Ray and Electro Therapeutics

State particular information desired when writing.

Address inquiries to JOHN A. WYETH, M.D., LL.D., President of the Faculty

$25.00 SPECIAL COURSES AT **$25.00**

The Chicago Policlinic and The Post Graduate Medical School of Chicago

The Twenty-Seventh Annual Special Courses Will Commence
at The Chicago Policlinic Monday, April 1, 1918 AND at The Post-Graduate Medical School of Chicago Monday, May 6, 1918

and will continue four weeks at each institution. These courses which have given such satisfaction for so many years have for their purpose the presentation in a condensed form of the advances which have been made during the year previous in the following branches: Surgery, Orthopedics, Gynecology, Obstetrics, Genito-Urinary, Stomach and Rectal Diseases and in border-line medical subjects. Fee for each of the above courses $25.00.

Special Operative Work on the Cadaver and Dogs, and General and Special Laboratory Courses. Special evening lectures during the course. For further information address:

The Chicago Policlinic
M. L. HARRIS, Secy.
219 W. Chicago Ave., CHICAGO

The Post-Graduate Medical School of Chicago
EMIL RIES, Secy.
2400 S. Dearborn Street CHICAGO

UNIVERSITY OF MARYLAND, SCHOOL OF MEDICINE
AND
COLLEGE OF PHYSICIANS AND SURGEONS

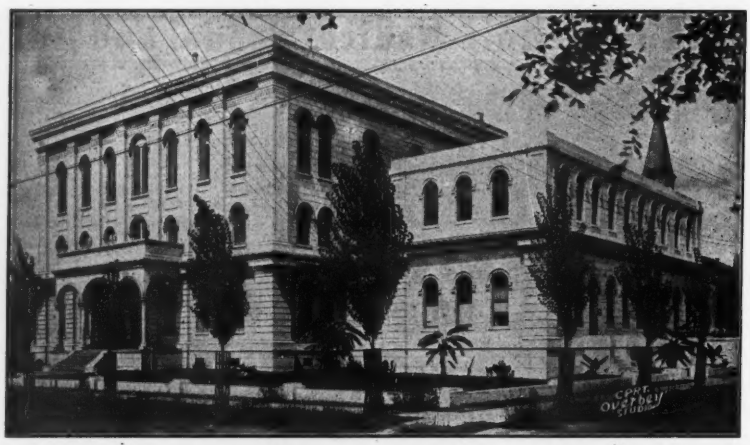
Requirements for Admission: One year of College Work in Modern Languages, Chemistry, Biology and Physics in addition to an approved four-year high school course. Beginning with January, 1918, two years of College Work will be required.

Facilities for Teaching: Abundant laboratory space and equipment. Three large general hospitals absolutely controlled by the Faculty and thirteen hospitals devoted to specialties in which clinical teaching is done.

The next regular session will open October 1. 1917.

For catalogue apply to **J. M. H. Rowland, M.D., Dean, N. E. Cor. Lombard and Greene Sts. Baltimore, Md.**

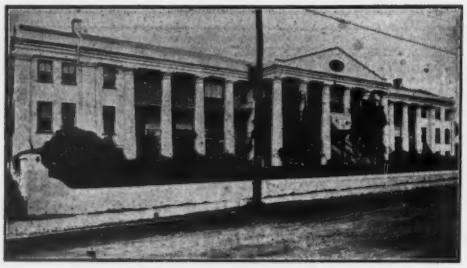
Patronize our advertisers—mention the Journal when you write them.



University of Alabama, School of Medicine

MOBILE, ALABAMA

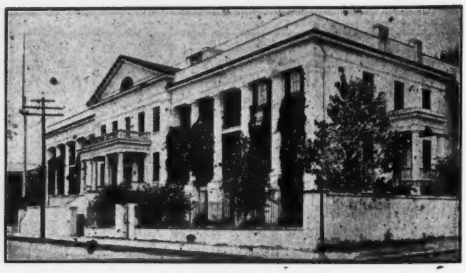
Rated Class A. Registered "Standard" by N. Y. State Educational Department. Laboratories of Anatomy, Physiology, Biology, Bacteriology, Pathology and Pharmacology. Equipped with latest standard apparatus. Operated by all-time Teachers. Instruction in Junior and Senior years mostly clinical. Below are shown four of the Institutions affiliated with us for clinical work.



Mobile City Hospital
206 beds. Internes appointed and controlled by the School. Clinical material abundant, studied by classes divided into small sections under all-time teacher.

Mobile City Dispensary
Controlled and operated by the School. Over 10,000 patients treated by students last session. Under direction of experienced teachers.

Alabama Maternity and Infant Home
Mobile, Ala. Capacity, 10 maternity cases and 100 infants. Professors of Obstetrics and Pediatrics control.



U. S. Marine Hospital
Mobile, Ala.. Surgeon in charge Professor of Tropical Medicine in the College. Patients utilized by order of Secretary of the Treasury of United States.

For entrance requirements and full information address DR. T. H. FRAZER, Dean, Mobile, Ala.

Stanolind

Reg. U. S. Pat. Off.

Liquid Paraffin

In Gynecology

Stanolind Liquid Paraffin is an ideal, odorless agent in which to suspend the powerful, antiseptic astringents, employed in gynecological work.

Its adaptability as a vehicle for astringents makes it the more convenient to use them in the treatment of inflammations of the vagina, cervix and endometrium.

Stanolind Liquid Paraffin combined with ichthyol, and similar products, is an excellent agent to apply to the inflamed vaginal surfaces, by means of tampons of cotton-wool.

Stanolind Liquid Paraffin also is indicated in the treatment of constipation and intestinal stasis.

Stanolind Surgical Wax For Injuries to the Skin

While it is more generally used in the treatment of burns, it also is employed successfully in the treatment of all injuries to the skin, where, from whatever cause, an area has been denuded—or where skin is tender and inflamed—varicose ulcers, granulating wounds of the skin, etc.

Surgeons will find it useful to seal wounds after operations instead of collodion dressings.

It maintains the uniform temperature necessary to promote rapid cell growth.

It accommodates itself readily to surface irregularities, without breaking.

Stanolind Petrolatum For Medicinal Use

in five grades to meet every requirement.

Superla White, Ivory White, Onyx, Topaz and Amber.

Stanolind Petrolatum is of such distinctive merit as to sustain the well-established reputation of the Standard Oil Company of Indiana as manufacturers of medicinal petroleum products.

You may subject Stanolind Petrolatum to the most rigid test and investigation—you will be convinced of its superior merit.

STANDARD OIL COMPANY

(Indiana)

Manufacturers of Medicinal Products from Petroleum

72 West Adams St. Chicago, U. S. A.

671

The
RADIUM INSTITUTE

1604 Mallers Bldg., 59 East Madison Street
Corner Wabash Avenue, Telephone Randolph 5794

CHICAGO

DR. FRANK E. SIMPSON, Director

COUNCIL:—Dr. F. A. Besley, Dr. E. C. Dudley, Dr. A. R. Edwards, Dr. O. T. Freer, Dr. M. Herzog, Dr. L. E. Schmidt, Dr. G. F. Suker.

TREATMENT of Malignant and Benign Growths with Radium; Postoperative Prophylactic Radiations following the Surgical Treatment of Cancer.

Radium is indicated in inoperable malignant conditions. By its use an inoperable case may become operable.

We desire to confer and cooperate with surgeons, assuring them adequate amounts of Radium to meet their requirements.

Your Diagnostic Acumen
can be translated into
Accurate Clinical Study
plus
Exact Laboratory Tests

We give physicians at a distance Exact Technic and Intelligent Interpretation.

We make every approved test of BLOOD, URINE, FECES, TISSUE, STOMACH CONTENTS, all EXUDATES and TRANSUDATES.

Write for Fee List, Free Containers, Exhaustive Literature.

Gradwohl Biological Laboratories

928 N. Grand Avenue ST. LOUIS, MO.
R. B. H. Gradwohl, M.D., Director

The Radium Institute of New Orleans

In Connection With

TOURO INFIRMARY

DIRECTING BOARD

Dr. S. M. D. Clark Dr. H. S. Cocram Dr. W. Kohlmann
Dr. U. Maes Dr. E. D. Martin Dr. R. Matas
Dr. F. W. Parham Mr. A. B. Tipping

For the treatment of conditions in which the use of Radium is indicated.

All correspondence should be addressed to the Radium Institute.

DR. E. C. SAMUEL, Radio-Therapist. A. B. TIPPING, Secretary.

Patronize our advertisers—mention the Journal when you write them.

Wesley Laboratory
12th & Harvey Streets
Oklahoma City

A Dependable Laboratory in the Southwest at Your Service

WE have given the Southwest a standard of laboratory service which is not excelled anywhere. We have brought it very close and in practical touch with the Doctors of the entire Southwest. We are ready to serve YOU, Doctor, in any and all clinical, research and diagostic work.

Wassermanns	$ 5.00	Sputum	2.50
Autogenous Vaccine	5.00	Pus Smears	2.50
Tissue Diagnosis	5.00	Pasteur Treatment	50.00
Blood Smears	2.50		

FREE: Bleeding Tubes, Sterile Containers, Culture Media and instructions for sending specimens

PROMPT REPORTS BY WIRE, PHONE OR LETTER

WESLEY LABORATORY

12th and Harvey Sts.
OKLAHOMA CITY, OKLA.

B. B. Culture

The Biological Antiseptic---Internally and Externally

Paradoxical as it appears, the statement is true. A capable lactic culture works in the intestinal tract to prevent the growth of the pathogenic bacteria, and the formation of toxins. It works in the same way in pus cavities, for many of the germs are identical with those in the tract.

For external use we especially urge that B. B. Culture be employed full strength with no antiseptic, after CAREFUL CLEANSING with sterile water.

This distinctive product has been evolved by careful and original work in our Laboratory. It is an aqueous suspension with a vast number of the true type, rod shaped, Bac. Bulgarici. B. B. Culture is issued only in three ounce bottles, with the date of production, and it is equally adapted for all uses where a lactic culture is indicated, including infants.

It will be a pleasure to mail you leaflets on this subject, or to answer inquiries by personal letter.

B. B. Culture Laboratory
YONKERS, NEW YORK

Perfected Electric Sterilizer

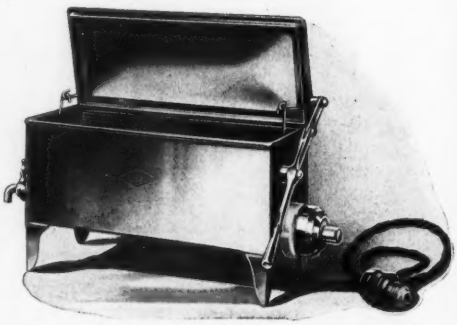
With Four New Features

IN this Sterilizer the cover is opened and the tray with instruments lifted out of the boiling water by simply pushing DOWN on a cool lever. You can use your hand or fore-arm. The tray stays up so that the instruments drain and cool before they are taken from the Sterilizer. Instruments with cutting edges can be laid in the tray, then slowly immersed in the water without injuring them.

Economical operation of the Sterilizer is made possible by having three heats. The "high" heat which draws the most current—is only used to bring the water to the boiling point quickly. The heat control switch—right on the Sterilizer—has an indicating dial that shows whether "high," "medium" or "low" is turned on. There is no fussing with plugs.

The Sterilizer will not burn out nor can the instruments be injured by overheating. Attached to the electric unit is a safety device that AUTOMATICALLY shuts off the current when the water in the Sterilizer becomes very low.

DOSTER-NORTHINGTON DRUG CO.
WHOLESALE DRUGGISTS
Surgical Instruments and Hospital Supplies
BIRMINGHAM, ALABAMA



There is a faucet to draw off the water which eliminates the necessity of disconnecting and carrying the Sterilizer to a sink each time it is emptied.

The Sterilizer is made of extra heavy copper coated inside with pure tin. Lifting lever and legs are cast brass. All parts are beautifully nickel plated. Complete with six feet of cord and connecting plug.

Three sizes	No. 410	10½ x 5 x 3"	$23.50
	No. 413	13 x 5 x 3¼"	26.00
	No. 416	16 x 6 x 3½"	29.00

State voltage when ordering.

Laboratory of Clinical Pathology

1250 Bank of Commerce & Trust Building
MEMPHIS, TENNESSEE

UNDER CHARGE OF

Dr. William Krauss and Dr. James S. Fleming

Everything that can be done in a clinical laboratory
Customary Prices

Containers, culture and serum tubes sent on application

INFLUENZA
(LA GRIPPE)
AND
ATOPHAN

Influenza (LaGrippe) a grateful field of activity for ATOPHAN.

Here it can broadly display its superior constitutional anti-inflammatory and pain-relieving properties.

Seven and a half to fifteen grains, two or three times daily, help readily to check and alleviate the worst manifestations: The respiratory inflammation—the congestive headache—the pain and stiffness of limbs and back, etc.

And ATOPHAN acts without cardiac depression, excessive diaphoresis, constipation or kidney irritation.

Only where the fever is high and persistent, a more active anti-pyretic is needed to back up the good work of ATOPHAN.

Now manufactured in U. S. A. Distributed exclusively by

Schering & Glatz, Inc., 150 Maiden Lane New York

Laboratory of Dr. Allen H. Bunce
ATLANTA, GEORGIA

"The Standard Southern Clinical Laboratory"

Allen H. Bunce, A.B., M.D., and J. W. Landham, M.D., Directors.

WASSERMANN REACTIONS. These are performed each day in the week after having carried out careful preliminary titrations of all materials to be used in the tests. All reagents used are prepared and standardized in our own laboratory, thus insuring their freshness and reliability. These things enable us to give prompt and accurate reports on all specimens submitted.

AUTOGENOUS VACCINES. All cultures for vaccines are grown both aërobically and anaërobically as a routine procedure. Vaccines are supplied only in sealed ampules, thus insuring their freedom from contamination during the course of treatment.

TISSUES. Upon request we make frozen sections of tissues and telegraph report on the same day the specimens are received. However, we prefer to embed the tissues in celloidin or paraffin, which requires from three to five days, before giving a final report. Both a preliminary report from frozen sections and a final report from embedded sections may be had upon request. Slides of all tissues examined are kept as a part of our permanent records.

We make all other standard clinical laboratory examinations required by physicians and surgeons in the handling of their cases.

We furnish bleeding tubes, culture media, and all other necessary containers free upon request.

Address

aboratory of Dr. Allen H. Bunce, Healey Building, Atlanta, Ga.

MELLIN'S FOOD

In every step in the manufacture of Mellin's Food there is constantly in view the ultimate object of making a product of definite composition

to Accomplish a Definite Purpose.

This purpose is to furnish certain food elements which, when added to cow's milk, make it a suitable food for an infant. The food elements in Mellin's Food —carbohydrates (maltose and dextrins), proteins and salts—when dissolved in water and added to cow's milk so change the balance of nutrition in cow's milk that the resulting modification presents fat, proteins, carbohydrates and salts in the proportion needed

for the Development of Infantile Life.

The success of Mellin's Food, therefore, depends not upon any one of the food elements of which it is made up, but upon the definite composition of "Mellin's Food as a whole" as a means to enable the physician to modify cow's milk to meet the requirements of infant feeding

in a Scientific, Rational and Efficient Manner.

MELLIN'S FOOD COMPANY, BOSTON, MASS.

CHICAGO LABORATORY

CLINICAL ANALYTICAL

Marshal Field Annex Bldg. 25 E. Washington St. CHICAGO Established 1904 Phone, Randolph 3610

AIDS IN DIAGNOSIS

Wassermann Test (Blood and Spinal Fluid)	$5.00
Complement Fixation Test (Gonorrhea, Tuberculosis, etc.)	5.00
Abderhalden Test—Pregnancy	5.00
Tissue Pathological Examination	5.00
Autogenous Vaccines	5.00
Smears, Sputa, etc.	1.00
Urinalysis	1.50

Send for containers and Instruction Book.
Our names and reputations stand back of our work.

RALPH W. WEBSTER, M. D., Ph. D., Chemical Dept.
THOMAS L. DAGG, M. D., Pathological Dept.
C. CHURCHILL CROY, M. D., Bacteriological Dept.

Important *Announcement*

Under the Provisions of the "TRADING WITH THE ENEMY ACT"

THE ABBOTT LABORATORIES

has been granted a license by the United States Federal Trade Commission to manufacture and sell

BARBITAL introduced as VERONAL

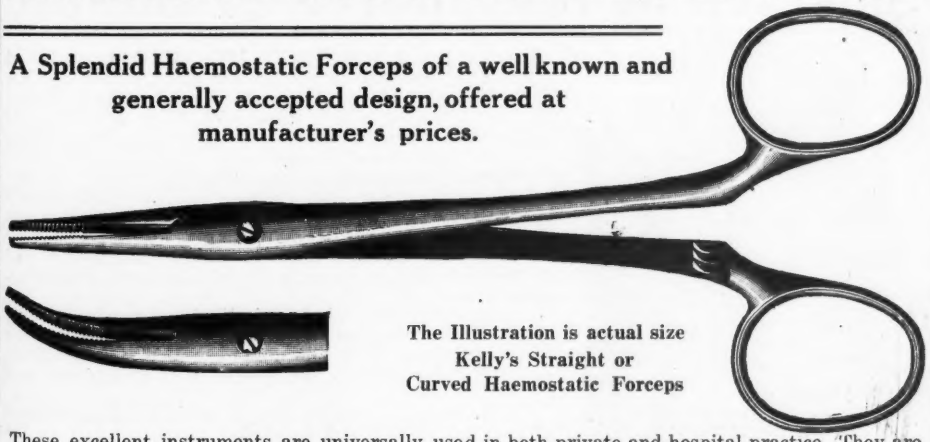
Barbital is the official name adopted by the Federal Trade Commission. By specifying "Abbott's" on your prescription to your druggist and by supplying "Abbott's" to your patients you will encourage the manufacture of important chemicals by a *Purely American Firm.*

Most druggists are stocked with the Abbott line. If yours is not, send your orders direct to our home office, or nearest branch. Prices on request.

THE ABBOTT LABORATORIES
Dept. 79
Home Office & Laboratories—Chicago, Ill.
New York, Seattle, San Francisco,
Los Angeles, Toronto, Bombay

REPRESENTATIVE OF THE VALUES WE GIVE

A Splendid Haemostatic Forceps of a well known and generally accepted design, offered at manufacturer's prices.



The Illustration is actual size Kelly's Straight or Curved Haemostatic Forceps

These excellent instruments are universally used in both private and hospital practice. They are carefully forged from high grade steel, well finished and finely nickel plated and polished. The prices at which we are offering them are actually less than the same instruments are regularly wholesaled for.

3X2217-A—Kelly's Straight 5½ in. Forceps, screw lock, weight, 3 oz., each $0.75; dozen..... $8.00
3X2218-A—Same; curved; each $0.75; dozen..... $8.00

Chicago Sales Department: 30 East Randolph Street

FRANK S. BETZ CO., Hammond, Ind.

RATIONAL THERAPY

Note: Uncombined bacterial and biochemic products seem to consistently and logically meet the therapeutic demands of advanced medicine by overcoming unnatural conditions or by supplying insufficient secretions.

THREE SUCH AGENTS:

BULGARA TABLETS—H. W. & D.—Bacillus Bulgaricus

For modifying the flora of the intestines by changing the chemical condition of the intestinal content.

LUTEIN TABLETS—H. W. & D.—Corpus Luteum (2 or 5 grain)

To supply deficient important internal ovarian secretion.

GLYCOTAURO—H. W. & D.—Purified Standardized Ox-bile.

A Natural Cholagogue

To increase the fluidity of human bile.

Further information upon request

THE HYNSON, WESTCOTT & DUNNING

Baltimore **PHARMACEUTICAL LABORATORY** **Marylan**

Selected at the Source of Supply

Sizes 00, 0, 1, 2, 3 and 4
Plain and 10, 20, 30 and 40 day chromic

ARMOUR'S STERILIZED LIGATURES are selected with rigorous care from the stock of the world's largest makers of catgut. Each string is tested for tensile strength and those with flaws are rejected; nothing but a perfect suture is considered fit for the Oval Label of Armour and Company.

When the raw gut is taken from the sheep, it is handled by experts under strict, sanitary conditions, who sterilize it at various and opportune stages of the processes through which it must pass.

Every precaution is taken to avoid contamination, and at the same time to preserve the full strength of the muscular fibre.

Both the plain and chromic ligatures receive several sterilizations, any one of which is sufficient to destroy micro-organisms of all kinds, and the final sterilization is done after the sutures are covered with chloroform and sealed in tubes.

Bacteriological examination is made of specimens out of each lot of ligatures finished.

Armour's Sterilized Surgical Catgut Ligatures are perfectly smooth, very strong, pliable, thoroughly sterile, and may be boiled if desired.

ARMOUR & COMPANY

CHICAGO 2098

SOUTHERN MEDICAL JOURNAL
JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION
PUBLISHED MONTHLY AT BIRMINGHAM, ALABAMA

Volume XI FEBRUARY 1, 1918 Number 2

MEDICINE

INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.

A CONSIDERATION OF THE PRESENT OUTLOOK ON TUBERCULIN THERAPY*

BY PAUL H. RINGER, A.B., M.D.,
Asheville, N. C.

What follows has to do entirely with the administration of tuberculin to cases of pulmonary tuberculosis. There can be no doubt that at present tuberculin is unpopular. Tuberculin literature is far more scarce than formerly, deals largely with surgical and diagnostic problems, and many that in the past used tuberculin to a large extent are employing it now in but an occasional case. It is the purpose of this paper to take a bird's-eye view of the situation and briefly to discuss certain phases.

I am a believer in tuberculin, but by no means an unbounded enthusiast. I feel, however, that quite apart from my own personal experience there must be good in any product that has been as carefully studied and investigated, as extensively used, and as minutely reported in the literature.

In an article on tuberculin written recently for the "Reference Handbook of the Medical Sciences," I divided the period since its discovery by Robert Koch (1890) into four eras, as follows:

1. Era of tuberculin *delirium*, extending from 1890 to 1893, during which it was believed that a cure for tuberculosis had been discovered, and the entire scientific world was by the ears.

2. Era of tuberculin *execration*, lasting from 1893 to approximately 1903, and arising from the twofold cause that tuberculin was found not to be a cure, and that many patients were killed by the heroic doses of the product then advocated.

3. Era of tuberculin *enthusiasm*, lasting from about 1903 to 1913, during which period tuberculin was most widely used, this era probably reaching its climax in 1908 at the time that the International Congress on Tuberculosis met in Washington.

4. Era of tuberculin *apathy*, beginning about 1913, and still in existence.

The era of apathy is the direct result of the era of enthusiasm. The two causes that brought to an end the era of enthusiasm were:

1. The use of tuberculin in practically all classes of cases; and

2. Lack of experience with, or lack of appreciation of tuberculin, on the part of many using the product freely.

It is well known to most that at the height of the era of enthusiasm the product was administered right and left. Patients asked for it, and in the majority of instances they got it. Many actively febrile patients were saturated with tuberculin and more tuberculin, until the wonder is not that a few died, but that so many lived. With many physicians the diagnosis of tuberculosis was practically synchronous with the institution of tuberculin treatment. The pharmaceutical houses sensed the need of tuberculin put up in proper dilutions, and a series of small and

*Read in Section on Medicine, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

appropriately labeled vials forthwith made their appearance. As a result many patients were given tuberculin by rule of thumb, according to the general directions on the label accompanying the serial dilutions. The question of reactions other than those of a violent systemic nature was wholly set aside, and the higher the dose attained the better the outlook for the patient.

While of course this state of things did not obtain everywhere, yet it was frequent enough for tuberculin to fall into disrepute with a large number of the laity and of the medical profession. Their attitude toward it at present is in no wise to be compared with the hatred of the product during the era of tuberculin execration. Rather is there now an attitude of sorrow and regret that a substance so vaunted as a cure should have fallen so far short of its aim.

There are, it seems to me, four reasons for the existence of the present apathy toward tuberculin. They are:

1. *Harm Done by Tuberculin.*—Unquestionably a certain number of patients have been made worse and their end hastened by the administration of tuberculin, but were every powerful drug that has occasionally done harm to be thenceforth tabooed, materia medica would soon be stricken from the curriculum of our medical schools and therapeutics would correspondingly suffer.

2. *Uselessness of Tuberculin.*—This is probably one of the strongest arguments advanced by those opposed to tuberculin: A patient will do just as well without it; it is a two-edged sword. Why subject the patient to a risk when there is nothing to be gained?

Tuberculin, at one time during the era of tuberculin enthusiasm, was advocated in such infinitesimal doses that it is small wonder that it appeared useless. Millionths or ten-millionths of a milligram, and even smaller amounts, were carefully injected once or twice a week. Often even these ultra-weak solutions were not made afresh every time they were used, and of course soon lost what little value they possessed. The unreasoning fear of any reaction of any sort, however slight, unquestionably was a potent factor in accentuating the so-called "uselessness" of tuberculin. True it is that in not a small percentage of cases it seems quite inert. The patient improves, but it is impossible to say how much, if any, of the gain is directly due to tuberculin. Such cases are trying to the physician and tend to shake his faith in tuberculin. There are other cases, however, similarly treated, that show such a marked improvement that the sagging faith is again restored. I have no exact figures to quote in support of the following statement, but I am of the opinion that of one hundred tuberculin-treated cases 10 % will show such hypersensitiveness that treatment will have to be abandoned lest much harm be done; 60 % will be in the negative or neutral group, where no positive benefit is to be observed; and 30 % will be unquestionably and distinctly benefited.

3. *Lack of Existence of Any Definite Criterion for the Selection of Cases for Tuberculin Therapy.*—This is unquestionably a fact. We have not had, nor have we at present any definite and exceptionless indication for its therapeutic use. Each user of the product gradually evolves certain rules by which he is guided in the selection of cases. Each non-user is apt, as time goes on, to become more and more prejudiced against it, because when he asks what cases are suitable for treatment with tuberculin he is met with many different, inexact or evasive answers. At the one extreme Pottenger in his new book, "Clinical Tuberculosis," advocates treating frankly febrile cases with tuberculin, and gives it to practically all febrile cases. At the other extreme we find Fishberg, in a book almost equally modern, protesting against the use of tuberculin as a therapeutic agent. It is the general consensus among tuberculin adherents that non-febrile cases are best suited for its use, while it is the contention of tuberculin opponents that these patients will do just as well without the product as with it. Cases particularly suited to treatment with tuberculin come, in my opinion, under one of the following heads:

1. Patients that have improved up to a certain point, that are afebrile, and that are in a condition of stagnation — going neither forward nor backward. Such pa-

tients need a whip, and tuberculin proves an excellent lash.

2. Patients that, despite bed rest, continue to run a slight degree of fever, not over 99.6°. In such cases the antipyretic power of tuberculin is of value.

4. *Lack of Any Definite Ruling Either for the Initial Dose or for Any Subsequent Dose of Tuberculin.*—Dosage is of course empirical. The old rule, to increase by one-tenth of a cubic centimeter of the dilution employed, is soon varied with increasing experience. Some have preferred to make the increase in dosage more uniform, thus: 1, 1.5, 2, 2.5, 3, 5, 7, 10, instead of having such great variations in the percentage of increase as is obtained when increase is made by one-tenth of a cubic centimeter at a time, thus: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. White and van Norman evolved a method of increasing and determining dosage by the reaction produced by the intradermal injection of a given amount of old tuberculin. Dosage has been regulated by the study of the opsonic index, but this method has never been practicable under conditions of ordinary private practice.

When the matter of the progression of dosage is considered, this depends of course upon what the physician administering tuberculin wishes to do, and how he looks upon the question of reactions. If he is not fearful of an occasional mild systemic reaction, if he welcomes mild focal reactions, and if he wishes to obtain the greatest amount of tuberculin tolerance on the part of his patient, he will start with a relatively large dose and rapidly increase. If he is a disciple of Sahli, to whom any reaction is anathema, he will begin with a very minute dose and will increase slowly and with great caution. If again he is of the school that, while not eager for the maximum dose, prefers and seeks the optimum dose, he will endeavor by using a small initial dose and increasing fairly rapidly, to reach as soon as possible that dose which results in the best subjective and objective condition of the patient, and having reached that dose, will maintain it until its effect is lost, when a new optimum will be sought. This method consists simply in trying to estimate the opsonic index by the clinical manifestations instead of by laboratory methods. Until the medical profession is united upon the effect desired from tuberculin and upon the mode of obtaining that effect, there can be no definite rule for the administration of either the initial or the "next" dose. No man will wittingly produce marked systemic reactions, but with that single exception methods of tuberculin administration vary and each physician, with added experience, finds himself individualizing more and more in his administration of tuberculin to his patients.

Disadvantages of Tuberculin.—As far as I can see the chief disadvantage or danger of tuberculin is its administration to the wrong type of case, in the wrong dosage, by an individual inexperienced in its use. Cases that show marked hypersusceptibility should in the vast majority of cases be detected in time to stop tuberculin before any permanent damage results. I have seen it do harm when administered under apparently ideal conditions, but as mentioned before, there is no powerful remedy that has never harmed when it was intended to benefit. I do not think that there are many men who, after an extended trial of tuberculin rationally given as regards both patient and dosage, will abandon its use because of the harm it does, though many may discard it as inert and useless.

Advantages of Tuberculin Therapy.—These, while not numerically great, appear well defined, and can be divided into two classes:

1. Direct advantages; and
2. Indirect advantages.

The direct advantages are twofold:

(a) The first direct advantage is of course the effect of tuberculin upon the immunizing forces of the body, and by their stimulation and the induction of an active immunity, the lessening of toxemia and the amelioration of symptoms. To discuss this would necessitate mention in detail of the mode of action of tuberculin, which time would not permit, and which, moreover, would be out of place in a paper discussing the tuberculin situation. Suffice it to say that to tuberculin users the chief factor is the specific protein of

the tubercle bacillus which is contained in any and all of the fifty-odd members of the tuberculin family.

(b) The second direct advantage lies in the fact that there is a strong conviction among those familiar with the product that relapses are decidedly less frequent in patients treated with tuberculin than in those untreated.

The indirect advantages of tuberculin may be divided into three:

1. Tuberculin therapy exercises a marked psychic effect upon the patient. The patient feels that something is being done for him over and above the tiresome routine of bed rest or chair rest and limited exercise. The weekly or bi-weekly hypodermics produce a marked impression and act as a stimulus to take the cure more conscientiously.

2. Tuberculin therapy enables the physician to keep a closer watch over his patient (a) generally and (b) locally.

(a) It aids generally in that the patient is seen more often than would be the case were he not taking tuberculin, and therefore habits and mode of life can be more frequently investigated.

(b) It aids locally in that frequent examinations of the lung lesion become purposeful instead of being more or less perfunctory, and therefore slight changes are more apt to be detected and their significance appreciated.

3. Tuberculin therapy enables the patient to exercise more careful observation of himself.

Rest is usually enjoined for the twenty-four hours succeeding each dose and temperature and pulse must be frequently and faithfully recorded. Dose days are definite, are not "movable feasts," and consequently many imprudent or thoughtless acts that the patient might commit are left undone because of a tuberculin dose.

It would not be justifiable to employ tuberculin for the single purpose of better controlling the patient or in order to make him feel that something definite was being done for him. Sterile water under an assumed name would do just as well. But when over and above the actual physical advantages to be derived from tuberculin are present the adjuncts above-mentioned, they have a right to play a role in the treatment of the patient if they play none in the treatment of the disease.

What must be the solution of the tuberculin question?

The solution must come about through the very clear realization of certain fundamental facts in connection with tuberculin and its administration. Some of these facts are:

1. Tuberculin must never be looked upon as other than an aid in the treatment of tuberculosis, must never be accorded first place, and must never be allowed to supplant, but only to supplement, a strict dietetic-hygienic regime.

2. Tuberculin must not be used by the inexperienced, as in their hands much harm can and will result.

3. Tuberculin must be used in a restricted number of cases and a good reason for using it must be present, a reason other and better than the mere fact that the patient has tuberculosis.

4. The dosage of tuberculin must not be regulated by rule of thumb, but must be highly individualized.

5. While opinions will differ on this point, the writer believes that in the long run the optimum and not the maximum dose should be sought, as it is a well known fact that a large amount of tuberculin tolerance is not synonymous with the establishment of a high grade of immunity to tuberculosis.

6. Users of tuberculin must be on terms of intimacy with the physical signs presented by their tuberculin patients, and users of tuberculin must be familiar with the early signs of activity in the lung, whether of recent or recurrent origin.

7. Users of tuberculin must auscultate their tuberculin patients before practically every dose, as only by so doing will mild focal reactions be recognized and dosage governed accordingly.

8. Users of tuberculin must have before them a definite conception of what tuberculin can do, of its mode of operation, and of what is desired in each particular case.

9. The question of reactions must unfortunately vary with the viewpoint of the administrator of tuberculin. Opinions on this important point will continue

to differ just as there exists controversy today over the administration of large or small doses of diphtheria antitoxin. No one will willingly produce violent systemic reactions, but the milder reactionary phenomena are desired by some and tabooed by others.

If men working with tuberculin, whether devoting their entire time to the treatment of tuberculosis or not, will bear in mind suggestions along the lines of those just mentioned, to which others equally or more valuable could doubtless easily be added, tuberculin therapy would be placed shortly upon a safer and a saner basis. Internal dissension in the ranks of tuberculin workers has done much to spread dissatisfaction among those not directly dealing with the product. It is highly necessary that tuberculin in the treatment of pulmonary tuberculosis be placed upon a sounder and surer foundation than that upon which it now rests in the opinion of the medical profession at large. The medical profession should not be willing to abandon tuberculin altogether any more than it should be willing that any or all of its members should administer tuberculin to each and every case of tuberculosis. Tuberculin is not a product to be used therapeutically by the general practitioner that has but two or three cases at a time to whom to administer it. Tuberculin is a product that will aid many cases when properly administered, and that, though by no means the specific with the curative powers that it was at one time supposed to possess, remains today the one biological product of value in the treatment not of the patient with tuberculosis, but of the disease: tubercle.

8-10 *Government St.*

FUNDAMENTALS OF VACCINE THERAPY*

BY ESTILL D. HOLLAND, M.D.,
Hot Springs, Ark.

This paper is not intended to be a compend of the various theories of immunity with which you are all familiar, but is intended to emphasize certain therapeutic results which may be expected from vaccine treatment and the reasons why such results can be expected.

Vaccine therapy, at the present time, may be described briefly as consisting of "autogenous" and "stock" vaccines, where and when to use them, and how to space the dosage so that each subsequent injection of vaccine will be administered during the heighth of the patient's positive phase.

One of the greatest differences of opinion among physicians in regard to vaccines seems to be as to whether autogenous or stock vaccines should be used in a given case, or in all cases—some contend that a stock vaccine is a shotgun prescription and should never be administered, while others think that there is a stock vaccine made for everything amenable to vaccine treatment and that it is far the best.

I think that it is very easy to reason why both the above classes are wrong, and I know, from experience, that it can easily be proven they are both wrong by watching the effect on patients.

The theory of vaccine immunity depends upon the stimulation and formation of "receptors" and the liberation of "antibodies," this again depending on the presence of "toxins" liberated by the infecting organism, or organisms, the more active the infecting organism of its class the more intense the stimulation to the formation of immune bodies. This being so, we should expect an active, virulent culture of a specific infection to have a greater stimulating power toward the formation of antibodies than would a culture taken from a chronic, less active infection of the same variety which may have lost part of its virulency through the partial immunization of its host.

Why take an inferior germ from which to make a vaccine to stimulate immunity?

That an infection does become less virulent is not alone proven by laboratory tests, but is seen in every-day patients.

One of the best examples is in gonorrhea. During the (so-called) first infection the patient is apt to be very miserable, the pain is acute, the edema pronounced and fever usually present. Examine the patient with his (so-called)

*Read in Section on Medicine, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

twentieth infection and you find none of these phenomena and he is the one who "would as soon have gonorrhea as a bad cold." This twentieth infection is most probably a continuation and acute exacerbation of his first infection, or an infection far distant from the twentieth. If this last patient should really become infected from a fresh source, with a virulent infection, I have no doubt but that his symptoms would approach in severity an initial infection.

Suppose that such a patient should develop gonorrheal arthritis with his fifteenth or twentieth exacerbation of gonorrhea, would it be best to administer an autogenous vaccine made from this attenuated culture, or would a culture made from an initial acute attack of gonorrhea be of greater benefit?

I do not think that there is any doubt that in such a case, *and this case covers nearly all chronic cases,* a stock vaccine is indicated.

If, on the other hand, a patient is suffering from some acute virulent infection such as boils, where each exacerbation is as pronounced and active as the initial lesion, an autogenous vaccine is certainly indicated.

I had a woman patient last year who had had infectious arthritis for over a year. She lived in New York City, had plenty of money and had been treated by good physicians. They had X-rayed her teeth and made every examination possible to determine the source of an infection, and not finding pus cavities, they had not given her any vaccine or kindred treatment. She came to Hot Springs to take the baths, improved slightly for a month and then stood still for five months, at which time she consulted me.

As I only know of three kinds of nonspecific, chronic arthritis, those that will respond to vaccine, those that will not respond to anything, and those that improve for no known reason, I put her on a mixed stock vaccine consisting of staphylococcus 800,000,000 and streptococcus 200,000,000.

In four weeks this patient was greatly improved and went home at the end of two months free from pain and in very good condition.

Suppose those physicians had found a pus pocket somewhere and made an autogenous vaccine from it with which to treat her I don't think her results would have been so prompt nor so lasting, for her infection was chronic.

If a patient comes into my office with a chronic arthritis, and another with an acute tonsillitis, I would much prefer to treat the arthritis with a vaccine made from the tonsillitis than with an autogenous vaccine made from the arthritis.

Where and when to use vaccines is not so definite, but the newer fields where we have been using it with good results are in some cases of infectious arthritis, arthritis deformans, eczema and psoriasis.

I have had good results in some cases of psoriasis and I now have on hand an old man with an extensive eczema who will not respond to any other treatment than a mixed stock vaccine.

This patient has been with me three times before. Every time he arrives he is nearly crazy with eczema, can't wear a coat or a shirt that touches his neck, his arms raw to the shoulders and his legs to the knees and his eyes nearly shut.

He has tried everything, been treated by innumerable physicians, was treated here before I got him the first time, which was about the time that Dr. Fox read his paper on the treatment of eczema with vaccine, just as that used in arthritis, and vaccine, the same as used in arthritis, and he was wearing a stiff collar in six weeks and didn't have a trace of eczema on him in two months' time. He left and relapsed in six months, returned and was cleared up in two months, left and relapsed in six months, etc.; and has kept that up till now he has decided to live here. You could not call this a cure by any stretch of the imagination, but it is the only relief that he has ever gotten, and by giving him vaccine for about two months out of every six I think that I can keep him absolutely clear of eczema.

We have also had some good results in injecting the sciatic nerve with vaccines in sciatica. This I do not consider due to an immunizing effect of the vaccine, but to the consequent trauma of the vaccine reaction in and around the nerve.

As to the spacing of the time between doses. We consider this of the utmost importance, for it is possible, in a case that is susceptible to vaccine treatment, to injure a patient, to neither injure or benefit a patient, or to improve a patient, all by the spacing of the doses.

After a dose of vaccine the patient's resistance is decreased—he enters the "negative phase;" soon he reacts and his resistance begins to build up till it reaches the level of his former resistance, after which it proceeds up above the line representing his original resistance for a variable degree, and near the height of this rise of resistance is where the patient should receive his next injection. If the patient receives his next dose of vaccine while his resistance is depressed below his normal, he will get worse; if he receives his next vaccine just as he reaches his former normal, he should neither improve nor get worse from the vaccine.

I have a man now who walked into a hospital in New York with a slight tenderness in one knee. They found bad teeth, extracted seven of them and made an autogenous vaccine, which they gave him once every ten days. This man became constantly worse, left the hospital six months later in a wheel chair and is still in a wheel chair, a year later. He blamed it all to vaccine and I had an awful time convincing him that he should have more vaccine. I have been giving him vaccine now for a month and he is so much improved that he has made arrangements to send his nurse home before Thanksgiving, as he will be able to take care of himself.

I haven't a doubt but that vaccine did have a great deal to do with this man's condition due to the fact that the dosage was too far apart. Ten days would mean that his positive phase had had time to drop back to his normal, and since it was not followed up, it probably dropped below his normal every time before receiving his next dose, in this way injuring him. I am giving him a full dose of stock vaccine every three days.

I find the safest, surest and easiest way to space the doses is to watch the local reaction at the point of infection and give your next dose at the time that this local reaction disappears, which is usually three days, although I have had them take eight days.

To make a long story short, we think that stock vaccines should be used in all chronic cases where the disease continues, but in a less active state, and that autogenous vaccines are indicated in acute cases where each exacerbation is as active and pronounced as the previous one.

Dr. Holland's paper was discussed in connection with Dr. Lyons' — discussion follows Dr. Lyons' paper.

THE VALUE OF TRIPLE TYPHOID VACCINE IN CIVIL AS WELL AS MILITARY LIFE*

BY RANDOLPH LYONS, M.D.,
New Orleans, La.

The prophylactic value of antityphoid vaccination needs no defense at the present day and all civilized nations have universally adopted this important measure. One has only to review the history of antityphoid vaccination in our own Army to appreciate what it has meant in the elimination of typhoid, even allowing full credit for improved sanitation. That this latter factor was not the only element in the successful prevention of typhoid was demonstrated recently on the Mexican border. Here there was no typhoid among the troops, but according to Chamberlain,[1] over 250 cases of paratyphoid infections with one fatality. The reason appears quite obvious — the troops had been protected by inoculation against typhoid but not against paratyphoid. Etiologically, the paratyphoid infections are transmitted in much the same manner as typhoid, with the possible exception of the meat-poisoning group, and general hygienic measures applicable to typhoid hold good for paratyphoid. From this it seems reasonable to conclude that in order to eradicate the typhoid-colon group of infections it is necessary to protect the individual not only against the typhoid but the paratyphoid organisms as well. This means the use of a vaccine containing the

*Read in Section on Medicine, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

typhoid bacillus and the paratyphoid bacilli "A" and "B"—a mixed triple vaccine. Such a vaccine has of late been recommended for our Army and is advocated by Craig[2] and others. In this country it would seem that until recently the importance of paratyphoid infections has been underestimated in military and especially in civil life.

France, England and Japan, according to reports in the literature, have learned this lesson and are employing preventive inoculations, containing all three organisms, among their forces.

The question whether or not such a triple vaccine should supplant the ordinary antityphoid vaccine in civil life is the point to be discussed.

In 1911, in a paper[3] on paratyphoid fever and its prevention, I advocated the use of a triple vaccine against typhoid and the two paratyphoids because of the prevalence of the typhoid-colon group in my community. At that time I was unaware of Castellani's[4] work along this line. He first tried out such a vaccine in India and states in 1909 that such a vaccine had been made use of in Ceylon since 1905. His vaccine consisted of 500 million typhoid bacilli and 250 million each of paratyphoid bacilli "A' and "B," respectively, to the c. c. The first dose was .5 to .6 c. c. and the second or third dose 1 c. c. to 1.2 c. c. Kabeshima,[5] in 1912 and later in 1914, reported on the extensive use of a combined vaccine of typhoid and paratyphoid "A" and "B." During the period from 1909 to 1911 he inoculated about 12,000 men with remarkably good results.

Since this time many advocates are to be found in this country, England and France. The vast majority of these, however, are army and navy surgeons. The importance of such a preventive measure in civil life seems to have been almost completely overlooked. This is probably due in part to the lack of statistics in our cities in regard to the actual percentage of paratyphoid infections. There are still too many practitioners who seem to think that paratyphoid fever is a rare condition. This can be accounted for by the fact that the diagnosis of typhoid is too often simply based upon clinical symptoms rather than from blood cultures and serological tests and also because many boards of health classify the paratyphoid infections under the head of typhoid.

Another factor which militates against the universal employment of such a vaccine is the prevalent opinion that paratyphoid infection is so mild that it is hardly worth while bothering about. It is obvious, then, that as long as such conditions and opinions exist the value of protection against all three diseases simultaneously will not be fully appreciated. It is, therefore, justifiable to examine briefly into the facts.

Some years ago in New Orleans, while making routine blood cultures on supposedly typhoid cases, I found the proportion of paratyphoid infections to be 8 %. Some of my colleagues have considered this estimate too conservative; nevertheless, this is by no means an insignificant proportion. As this community has fewer enteric infections than many cities of its size, it is fair to assume that other communities would have the same proportion of paratyphoid infections, or possibly higher if the subject was investigated statistically.

While it is quite true that on the whole the paratyphoids are milder and of shorter duration than typhoid, when we consider the mortality and complications, we find them deserving of more respect. In my own experience I have had a case of paratyphoid run fever for over two months, and another case, which I reported, developed a cholecyctitis caused by the same organism, which necessitated surgical interference. Carles,[6] in France, reports 170 cases of paratyphoid infection, 63 of whom had fever 20 to 30 days; 38, from 1 to 2 months; 2, for 3 months, and 1, for 4 months. Sity-six had fever for 6 to 20 days only. Relapses occurred in a little over 12 % of these cases; there were 8 deaths, or 4.7 %. Rimbaud[7] obtained positive blood cultures in 355 out of 730 cases of apparent typhoid. One hundred and ninety-four of the cultures were paratyphoid (138 Para "A" and 56 Para "B"). The mortality in the paratyphoid infections was 4.6 %. He states, however, that an attack of paratyphoid incapacitates a man for military service for three months at least.

Pathologically, the causes of death in 16 cases of paratyphoid infections examined by Dawson and Whittington[8] were found to be: perforation, 2; peritonitis, 2; hemorrhage, 2; hemorrhage and toxemia, 3; toxemia, 4; pneumonia, 2; splenic abscess, 1. These 16 necropsies represented a mortality of 4 %. Many other reports in regard to the pathology and complications of the disease could be appended if time permitted.

A further objection against the use of the mixed vaccine is one that Castellani had to answer some years ago. He says: "The usual objection raised against the use of the mixed vaccine is that it will probably give a much smaller amount of immunization than the simple typhoid vaccine and that paratyphoid 'A' and 'B' being diseases of less importance than true typhoid, it would be a mistake to run such a risk. This belief is not supported by my experiments." Upon individuals he found that those inoculated with the triple vaccine developed for each germ almost the same amount of agglutinins as those inoculated with each germ separately. This observation has very recently been borne out by Craig,[2] who concludes that such a vaccine gives as good results in immunization as far as can be judged by agglutinin curves as does the typhoid inoculation and that neither the general nor the local reactions differ in any degree from the inoculation with simple typhoid vaccine. The results, both from a practical and theoretical point of view, are all in favor of combining the three organisms in a single vaccine.

Craig employed a vaccine of higher strength than Castellani. It contained a 1,000 million typhoid and 750 million paratyphoid "A" and 750 million paratyphoid "B" bacilli per c. c. The first dose was 0.5 c. c. and the second and third doses each 1 c. c. This should prove an effective dosage.

In my early work I employed a vaccine containing equal numbers of all three organisms in a strength of 2,000 million organisms per c. c., or in round numbers, 700 million typhoid, paratyphoid "A" and paratyphoid "B," respectively. During the past two or three years I have used the mixed vaccines put up by biological houses. Most of these contain 1,000 million typhoid organisms and 500 million each of paratyphoid "A" and "B" to the c. c. The first dose is .5 c. c. and the second and third doses 1 c. c. each.

It would be advisable should the Government adopt such a vaccine as Craig suggests, that biological houses put upon the market one of similar concentration in order that comparative results might be obtained.

In my experience with the triple vaccine I have found it advisable to begin with .25 c. c. for the first dose, advancing the dosage to .5 c. c. for the second and 1 c. c. for the third dose. In civil work this is a good plan, as many individuals are discouraged from taking their second and third doses if they happen to have some reaction with the first dose. During the past six years I have inoculated over 150 individuals with the mixed vaccine. Of these I have been able to follow 50 from periods of one to six years. Those inoculated during the past year have not been considered in this report. None of the 50 individuals mentioned have developed any infections of enteric type. My own blood was examined a few weeks ago by Dr. F. M. Johns, who found that it still agglutinated B. typhosus up to 1/100 dilution in forty-five minutes, but no longer agglutinated paratyphoid "A" and "B." This is quite an unusual reaction after a lapse of over six years and possibly depends upon the fact that my last dose was a large one containing 1,000 million of each organism. This brings out an interesting point that while the dosage of each organism was the same the highest agglutination titre was always against B. typhosus.

In civil practice a vaccine containing a greater number of typhoid organisms is the one of choice. Such a vaccine can not be considered as a shotgun preparation, as the organisms belong to the same family group and group-immunity factors probably play a part in enhancing the immunity against B. typhosus.

It should be recalled that paratyphoid "A" and "B" are not the only intermediates between the typhoid and colon organisms. Occasionally a "gamma" or other intermediate is isolated, but these

are so rare as to be negligible and are of no practical importance.

The advisability of adding other organisms to such a vaccine, as has been suggested, such as dysentery, cholera, etc., is of questionable merit. It would undoubtedly tend to reduce the concentration of the organisms present and mix unrelated groups—all of which rather smacks of the shotgun.

As regards methods of administration, intervals between doses, and dangers to be guarded against, the same rules hold good for the triple vaccine as the simple antityphoid. They are so well known as to require no comment.

In concluding, a word should be added in regard to the mixed typho-serobacterins. It is claimed that they produce a better and more rapid immunization with less local and constitutional reaction. It is too early to make predictions in regard to the lasting quality of the immunity obtained. At the present time their high cost and somewhat questionable superiority will prevent them from coming into general use. My experience with this type of vaccine has been obtained with the product found on the market and limited to 15 cases. These individuals for one reason or another required rapid immunization and the injections were administered every other day. Among this small group the local and general reactions appeared to be somewhat less than with the ordinary triple vaccine, but the number is too small to warrant any deductions.

CONCLUSIONS

1. Paratyphoid infections are more common than generally supposed.

2. The disease has a death rate of from 1 to 4% with much the same complications as typhoid.

3. Practitioners should corroborate the clinical diagnosis of typhoid with blood cultures or serological tests in order to differentiate typhoid and paratyphoid infections.

4. Boards of health should classify typhoid and paratyphoid infections separately in order to determine the relative prevalence of paratyphoid infections in a given community.

5. A mixed triple typhoid vaccine gives ample protection against typhoid, at the same time protecting the individual against paratyphoid "A" and "B." It should supplant the simple typhoid vaccine in communities where paratyphoid infections exist.

6. If such a vaccine were generally employed in civil life the morbidity from fevers of unknown origin and many so-called typhoids with negative bloods would be greatly lessened.

7. In military life such a vaccine is rapidly becoming a necessity.

BIBLIOGRAPHY

1. Chamberlain, W. P.: "Care of Troops on Mexican Border." J. A. M., Nov. 20, 1916, Vol. LXVII, No. 52, p. 1573.
2. Craig, C. F.: "Triple Typhoid Vaccine." J. A. M. A., Sept. 22, 1917.
3. Lyons, R.: "Paratyphoid Fever and Its Prevention by Means of a Trivalent Antityphoid Vaccine." N. O. Med. & Surg. Jour., Nov. 1911, Vol. LXIV.
4. Castellani, A.: Transactions of the Bombay Med. Congress, 1909. "Typhoid-Paratyphoid Vaccination with Mixed Vaccines." Brit. Med. Jour., Dec. 20, 1913, No. 2764, p. 1577; Brit. Med. Jour., May 1, 1915, p. 758.
5. Kabeshima, T.: "Preventive Inoculation by the Combined Vaccine of Typhoid and Paratyphoid Bacilli." Bull. Naval Med. Ass. of Japan, May, 1912, No. 1, p. 1.
6. Carles, J.: "Les fievres paratyphoides." Bailliere et fils, 1916, Paris.
7. Rimbaud: "Etude comparative des fievres paratyphoids et de la fievres Typhoids." Paris Medical, March 25, 1916, VI, No. 13, p. 303.
8. Dawson & Whittington: "Paratyphoid Fever—A Study of Fatal Cases." Quart. Journ. of Med., Jan., 1916, Vol. IX, No. 34, p. 98.

DISCUSSION

Papers of Drs. Holland and Lyons.

Dr. J. E. Paullin, Atlanta, Ga.—Many of us have wondered in times past why some of our patients who had received prophylactic injections of bacillus typhosus a few months subsequently developed clinical typhoid fever, and we were tempted to ascribe the development of that disease to an inefficient typhoid vaccine.

During the past year we have had in Georgia a small epidemic of paratyphoid infection, which occurred in quite a few instances in individuals who had previously received prophylactic doses of bacillus typhosus. While it is true that there are coagglutinins between the bacillus typhosus and paratyphoid organisms, at the same time prophylactic injections of the bacillus typhosus do not furnish any immune substance to para "A" or para "B" organisms. The only way of telling whether you are dealing clinically with infection of bacillus typhosus or paratyphoid "A" or paratyphoid "B" is by blood cultures, and the only method of preventing the development of these diseases is by the prophylactic injection of a combined or triple vaccine. Blood cultures made within the first week or ten days of the disease will very clearly differentiate the larger organisms one has to deal with, and many ill effects or lack of efficiency which has been previously ascribed to prophylactic injections of typhoid vaccine, are due to the fact that the individual who subsequently develops infection has

not developed typhoid, but has developed infection with paratyphoid "A" or paratyphoid "B." Para "B," I am inclined to think, is a very common disease, and it is only within the past year or so that the profession as a whole has begun to differentiate between the infections with the various organisms. Every fever which ran a more or less continuous course, with the usual symptoms of typhoid fever, as Dr. Lyons has well pointed out, has been classed as typhoid fever, and in rural districts particularly, where such an infection did develop, immediately prophylactic injections of bacillus typhosus were given. These, of course, did not protect against the para infections, but in this particular epidemic, which happened during the summer, where the infection was altogether with para "B," as soon as prophylactic injections were instituted of para "B," instead of going ahead and giving bacillus typhosus, it was only a matter of a short time, together with the usual sanitary measures to control the spread of the disease, that the infection was soon under control.

I think Dr. Lyons has brought to our attention a subject which is of a great deal of importance, and one which will have more consideration from those of us who are interested in preventing this infection.

Dr. E. C. Thrash, Atlanta, Ga.—A number of years ago, in the administration of vaccines, I felt very much less enthusiastic in these agents as a cure and much more enthusiastic over vaccines as a preventive.

We have the best illustration of the preventive effect of vaccines in the work that has been done with the typhoid germ, with its concomitant or allied germs, and we get an illustration of this lack of efficiency as a curative measure in our efforts to cure diseases with autogenous vaccines.

There is a field, in my opinion, for vaccine prophylaxis, and I believe we will come to use less and less vaccines as curative measures. Foreign proteins produce an increase in the cellular substance of the blood, and no doubt establish resistance in a measure in a non-specific way; but when we attempt to make a specific remedy from autogenous vaccine, unless we grow these vaccines in pure cultures from the blood, there are ten chances to one that we get a germ concerning whose pathogenicity we do not know, and we inject a lot of substances which are nothing more nor less than foreign proteins.

I believe that ultimately vaccines for curative measures will be given in the form of an indifferent protein with a specific vaccine that is producing disturbance. This can be obtained by bouillon filtrates, and we get a foreign protein from the bouillon filtrates, and the specific toxins in the filtrate are eliminated; they are by-products of the growth and have no bearing upon the disease.

I have been impressed particularly in the administration of tuberculous vaccines. If we get a case of tuberculosis with a fairly high degree of resistance we can immunize that patient with tuberculin, and we do apparently employ a curative measure, but we establish immunity as in typhoid fever. But if a patient is profoundly toxic and the disease is advanced, our attempt at vaccine therapy is worse than futile. Our measures only accomplish results in producing immunity in a person in whom it has already been fairly developed.

Dr. W. L. Dunn, Asheville, N. C.—Why is it that we have two different views in regard to vaccine therapy, one of which is the wholesale condemnation of vaccines and the other is favorable to their use? There must be some explanation for both. One explanation is that very often some good results are obtained from the use of vaccines, and the other is that there have been a great many negative or bad results. It seems to me that every one who has used autogenous vaccines has been struck in individual cases with the marvelous results obtained, whereas in a number of cases the results secured are absolutely negative.

Rather than condemn the use of autogenous vaccines, we must seek for an explanation either in the method of their administration or in the preparation of them. We have used them rather extensively and have been impressed with the marvelous results secured in a certain number of cases, and I feel that while we are condemning so vigorously stock vaccines, we must remember that our methods of production of autogenous vaccines are by no means good nor well worked out. There seems to be some place where we are at fault. Perhaps it is in culturing the organisms on individual media and reculturing them to get pure cultures for our vaccines.

After all, there seems to be something in vaccine therapy in isolated cases, and we should look to our methods of preparation and methods of administration before we condemn vaccines in a wholesale manner.

Dr. Deering J. Roberts, Nashville, Tenn.—I beg leave heartily to add my endorsement to vaccine therapy. Vaccine therapy is but an added lustre to the great renown of the immortal Jenner. Jenner used autogenous vaccine when he took the pus which contained serum from the udder of a cow. Vaccine therapy has done wonders not only in smallpox, but see what it has done for diphtheria! See what it is doing in tetanus! It is one of the brightest crowns belonging to progressive medicine. While it started a long time ago with Jenner, we are getting further and further along and have not yet reached the climax of its efficiency. We have to study a little more, work a little harder, apply the eye to the lens a little more, and use more coloring reagents to differentiate between the different etiological factors concerned in the various diseases before us.

With reference to paratyphoid, I regard it as a misnomer. Paratyphoid is a duplication of the name. Paratyphoid, like typhus, was considered and known a decade and a half ago. About that time we had an epidemic of what we now know as typhoid fever in the City of Nashville. Cases developed in the summer and the disease extended well on into the winter, and it was certainly an epidemic. Some physicians called it typhoid. We had cases in the early stage of what was thought to be a new disease as I called it then, because I had not seen it develop in such numbers

before. However, it was called typhoid because in the early stages there was more or less constipation. The intestinal tract of these patients was loaded with cathartics; they went on for eight or ten days or two weeks and then were turned over to the undertaker to hide the mistakes. I read a paper before the Tennessee State Medical Association at that time entitled "Fever—Just Fever," because that was all it was. These patients did not have any intestinal trouble. I had no case that lasted over two weeks which did not belong to typhoid fever. I simply let these cases alone. Of course, I had to give them some medicine. I resorted to a placebo. People will take drugs when they won't take advice. I put these patients on six drops of dilute phosphoric acid every six hours; that gave the nurse and family something to do. It did not harm them. Of the mineral acids, perhaps phosphoric acid is the best to stay tissue waste. Later on, as time passed, the microscopists got to work and now we have paratyphoid, which I regard as a misnomer.

Again, I wish to say, all hail to Jenner and to his successors for doing so much today in regard to vaccine therapy!

Dr. Lyons (closing).—I have nothing further to say except to emphasize the point Dr. Paullin brought out, that we should pay more attention to paratyphoid infections. Another point he has brought out has been mentioned recently by a number of English observers, that cases that have been vaccinated against typhoid were having typhoid fever again within a comparatively short time. When these cases were studied intensively by blood cultures and careful serological tests, they were found not to be cases of typhoid but of paratyphoid. Had these tests not been made, these cases would have gone down in medical literature as having had typhoid, after having been vaccinated against the disease, to the discredit of anti-typhoid vaccination. By making a careful diagnosis of our cases into proper groups, and by the use of a triple vaccine, we will not have so many cases of that type, and the credit of anti-typhoid vaccination will be maintained.

THE NATURAL STARTING POINT OF ALL RATIONAL MEDICAL THOUGHT*

By J. C. Johnson, M.D.,
Atlanta, Ga.

This day is full of meaning for us, not merely as an event, but because of its opportunities and its obligations. Its opportunities are as broad as we may see fit to make them. Its obligations are as serious as is the purpose of our organization. The purpose of our organization is to give to gastro-enterology the recognition it deserves, to enlarge its usefulness, to increase professional efficiency and serve the common good. To this end, we shall devote our energies and invite the co-operation of all who have like desire and like determination.

As yet our number is small, because as is the case in every movement, some few have undertaken the initiative and have endeavored to develop plans by which the Association may be well established and its interest best conserved. The ideals of membership have not been conceived in estimate of our own achievements, but in what we believe this work demands and what it promises for its well doing.

The task before us is not a little one. There will be many difficulties in our way and doubtless much discouragement. But if we do our duty it is reasonable to expect that the Association will grow in size, in strength, and in service.

By your courtesy I am allowed to extend my opening remarks. This I wish to do in a general way instead of confining myself to the formality of a single topic.

It is always agreeable to enumerate our virtues and successes, and of each of these the profession has very many. But it is more profitable to acknowledge our deficiencies, to recognize if possible the cause of them, and try to overcome them. With highest appreciation, this is the view I wish to take this morning.

Medicine, as a science, is the same today that it has always been, and so it will remain throughout all efforts to unfold it. As an art, it is more elaborate; it has changed from time to time, and is still in process of evolution.

Though our facilities have increased and our methods have improved, practice is more laborious and results are yet very far from what they ought to be, considering the cost to the public and the time and energy expended by the profession. This is not the fault of medicine itself, nor altogether the fault of the profession. We find more to do and are able to do it better, but obstacles have increased proportionately. The laity have gathered a small and spurious knowledge of disease from current magazines and the daily press which, instead of enabling them to under-

*President's Address, Southern Gastro-Enterological Association, Memphis, Tenn., Nov. 12, 1917.

stand their ills and to carry out their treatment more intelligently, only stimulates their fertile imagination and encourages them to dwell upon, discuss and doubt everything that is done for them. I do not mean by this that a patient should not understand by what omission or commission the occurrence of disease is favored, or by what natural processes it may be overcome; nor do I mean that a physician should withhold from a patient, or one's family, those facts which prudence sanctions, or which practical necessity demands. I mean that ability to obey instructions does not depend upon an intimate knowledge of one's own anatomy or pathology, and that effort on the part of a patient to acquire it or of the profession to inculcate it, is injudicious and often harmful.

There is no conceit more obstinate than that of a little learning, and nothing more stupifying than the false sense of security which it gives.

When common schools and colleges appreciate the importance of practical training in the rules of health and avoidance of disease, and teach them thoroughly, when the laity know these rules and apply them, then, and not before, will they be prepared for the higher education into the intricacies of which they are now being blindly led through many avenues and by many agencies.

The instability and uncertainty of purpose in many patients is not always a mental trait nor a moral product. It sometimes reflects the attitude of the profession toward each other, and of some to medicine itself, as much as it indicates a lack of confidence in individual members of the profession. In any case it bars successful treatment, for it makes hearty co-operation between the doctor and the patient most difficult. For this cause our efforts are often aborted, our data often incomplete, and we can not reach satisfactory conclusions on many important points in study and in practice.

This obstacle to progress will not be removed until the laity are no longer led to expect results within a time unreasonable, and by means which, however efficient and reliable under some circumstances, are known by those of wide experience and careful observation to be inadequate and ineffectual in others.

At the best, the busy practitioner, especially in the general field, has not time to follow closely with exhaustive analysis all of his cases, and thus is lost to medical learning and medical literature much that would be profitable. In hospitals, and in some clinics, where team work is intelligently done, there is more opportunity for thoroughness, and more reason for success in correlating and massing facts into concrete and communicable form. But team work has not anywhere reached that stage of development that the work or the results may be readily accepted as a basis for standardization. Besides, much of the present methods and means in clinics and laboratories is either not available or suitable for general use, and there can be no full alignment nor concert of action by the profession without some common meeting ground and more agreement than now exists.

In many ways and for many reasons the progress of gastro-enterology has been coincident with progress in general medicine. It is also true that progress in general medicine has been dependent largely upon knowledge of the alimentary tract. Medical progress as a whole has been rapid during recent years, but the lines of progress have been too wide apart for perfect co-ordination, economy of effort, and for the best results.

The intensive study of organs in research work has been rewarded by an abundance of new knowledge, but the full value of this knowledge has not been realized, because it has not been given proper place and significance in the common field. This has not been the fault of those who have furnished the knowledge but of our elastic system of education which allows as much room for the expansion of ideas which have no foundation in fact as it does for scientific truth.

The more intimate knowledge of the ductless glands has clarified and enlarged our views of reciprocal action and in some instances has made diagnosis more direct, but in others it has made it more difficult. Between the ultimate functions of organs and the primary source of their potentiality, we must recognize superlative fac-

tors of excitation and inhibition, having part in the development of the symptom-complex and in the treatment of diseases. Our vision is not yet broad enough nor our knowledge sufficiently exact that we can intently regard one essential without danger of overlooking another. It is not enough to know that the secretion of one gland activates another or that it raises or lowers arterial tension and affects muscular action and metabolism. The more important question is, where do the ductless glands get the power ascribed to them and by what agencies is this power directly exercised. How are the functions of these glands maintained, and how may they be perverted? Neither can this question be ignored, or evaded, for it must be remembered that no organ or system in the body can be an independent factor in the preservation of vital balance, or in the production of disease.

We have regarded as very important the variable proteins and their products. Until recently, comparatively little has been said about the electrolytic action of the inorganics, notwithstanding H_2O forms two-thirds of the body weight, and others, such as $CaCO_3$, NaCL, $MgSo_4$, not only enter largely into the fluids and solids of the body, but regulate osmosis, secretion, excretion, tension, and have to do with metabolism in all its phases.

Physiologists have long since announced the relative proportion of these proximate principles in the body, and time and time again have called attention to their respective roles in composition and in function. Pathologists also have contributed largely to our knowledge of these compounds, in disease, and while some discrepancies, touching their biologic relation in conditions in which there is positive evidence of their primary influence has not been avoided, this has not been due to lack of agreement upon fundamentals, but to difficulty in co-ordinating efforts necessary to demonstrate the manner in which this influence is exerted.

It is encouraging to note more recently a growing interest in this field of inquiry. Just as we have endeavored to follow through all their changes the proteins in metabolism and have sought to associate them as causative agents in certain pathologic conditions, so we are led to believe that inorganics without change may have more to do with the processes underlying these conditions than have the proteins. In fact, is it not probable that upon the inorganics the body most depends for its dynamic control, and for maintenance of vital equilibrium? In any event, the utmost part which any compound plays in organic life can be determined only by careful study of each one separately, while considering the properties of them all in class.

It remains for clinicians, by painstaking observation and close analysis, to add to and elaborate what we already know of these properties in diseases whose essentials of pathology are akin, and hence, in which inorganic balance is apt to be correspondingly disturbed. This is already being done to a degree, even where the observation is not directed chiefly to inorganics, as is albuminuria, glycosuria, toxemias.

Erlich's doctrine of antibodies has thrown a new and pervasive light upon plasmic pathology, but as yet we must regard this contribution as a revelation of results and not as a discovery of causes. Behind the group of toxic molecules are the unknown facts or anaphylaxis and the secrets of immunity. Conditions, congenital or acquired, are the basis of all diseases, and these conditions can come about only by changes in the primary functions and forces which support nutrition. Conditions can not create themselves, nor can functions change upon their own initiative.

A toxic agent is powerless within itself to convert normal into perverted action. The fact of natural immunity presupposes this. Besides, immunity is not a local but a constitutional state, or a product and property of general metabolism. And whether immunity be natural or acquired, the units of vital resistance are the same, having the same source and the same effect.

The advance word of the profession is preventive medicine, and for its accomplishment we have adopted vaccination, sanitation and pure food laws. Without these little progress could be made. But preventive medicine contemplates and re-

quires something more than these. It contemplates and requires economy of all the forces having to do with the human body, from within and from without; and this economy can not be regulated by any single law or means, but only by all the laws and all the means which are employed by the body itself for conservation and support of its vital agencies. It contemplates conditions predisposing to disease, the many sources of anemia, of myasthenia, of diatheses and cachexias,—conditions which invite and furnish the foundation for local organic change. It is with these that true etiology and pathology are most intimately related, and not so much with secondary forms and the vague reflexes of speculative origin.

The time will never come when we will know all there is to be known about medicine and the human body in health or in disease. But there are some facts which we do know, and upon which we are all agreed, notwithstanding they have been so long ago concluded, and are now so commonplace, they seem to have lost something of their force in routine work, especially with those whose interest have carried them furthest from the natural starting point of all rational medical thought. This starting point is the consideration of those processes which create the demand and regulate the material supply of the body.

From the beginning of human life the ever-present problem is food, not only in amount, kind, quality and fitness for the body's needs, but in ability of the body to make use of it.

Any food is useless which the body can not digest, can not absorb, can not convert into its own substance, and make a source of its activities. Food within itself has not the power of adaptation or of constructive change. Neither can it directly supply this power. It can and does immediately excite functions of digestion and absorption, but these functions are not dependent for their exercise upon the food undergoing digestive change. Readiness of the alimentary tract for digestive work is, in health, a constant quality, inherent in its tissues and maintained by their metabolism. Yet, because metabolism may appear to be normal, it may not always be taken for granted that a given period or act of digestion is perfect. Despite the contribution made by one or more organs to the act of another, the act within itself is an entity, though it may be abnormal both in character and in extent. And no action can be inspired or carried to effect by any influence which does operate primarily and directly through the natural functions of an organ. A fact worthy of consideration in the study and classification as well as in the treatment of diseases.

Metabolism is something more than the vital expression of the form, state and composition of the food; and digestion is something more than simple cleavage or synthetic union. Neither digestion nor metabolism can be defined in terms of any single process, or in the performance of any single function, and while an act or an incident of the one may be studied separately from an act or incident of the other, continued action of the one presupposes correlative action of the other, and successive incidents are but the result of the two participating in a common effort to a common end. For this reason one may not be affected without disturbance of the other, and in the strength consistency and permanency of their relation rests individual capacity to resist disease. So, also, must any definition of pathology in the organs of digestion comprehend every process and conformation of these organs, as well as the means of their supply.

Deficiency of food may alter the state of organic equilibrium, whether that deficiency be original in amount or character, or is the result of impaired digestion. But deficiency alone can not cause local organic change. It may favor the development of conditions which we have named as predisposing to disease. But, even in starvation, the natural though restricted commerce of the body is maintained till every available source of energy is exhausted; and unless some pathology preexists, or something from without disturbs its effort at economy, the vital pendulum swings with rythmical succession until constructive action ceases.

The work of the profession has been made more difficult and the progress of

medicine has been retarded by careless regard of the simple fact that man lives by what he feeds upon, and that among the first essentials of support is efficiency of the digestive tract.

The ground upon which the gastro-enterologist stands is one of unusual opportunity and advantage, if he be not one of those indifferent to small proportions, and the slowly accruing, but sure results, of impartial observation and faithful effort.

SOME MANIFESTATIONS OF MALARIA RELATIVE TO DIGESTIVE DISTURBANCES*

By J. E. Knighton, M.D.,
Shreveport, La.

It is not my purpose to discuss in this brief paper the ordinary gastric disturbances incident to acute malarial infection which are so well known to every general practitioner, but to call your attention to some recent observations in connection with chronic or so-called latent malaria.

During the summer and autumn of 1916 there was an unusually large number of cases of malaria among the rural population surrounding Shreveport as a result of excessive rainfall followed by hot dry weather, which gave favorable conditions for the development of mosquitoes. Many of these cases took treatment only so long as the more prominent symptoms were present, and hence continued to carry the parasites in their blood. During the past spring and summer I have had occasion to make observations regarding many of these patients who came to consult me, not for malaria, but for digestive disturbances.

The class of cases to which I wish to call especial attention is that composed of latent malaria associated with hypersecretion or gastrosuccorrhea. These patients complain of the usual symptoms of hyperchlorhydria and continuous acid secretion just as when this condition is produced by other causes. Many of them suffer the burning pain when the stomach contains no food and get relief by taking food to the extent that one often suspects ulcer.

*Read before Southern Gastro-Enterological Association, Memphis, Tenn., Nov. 12, 1917.

The usual history is that during the past summer or autumn the patient had an attack of malaria for which treatment was taken for a short time only, and that

Radiograph showing normal stomach of Mrs. M. F., whose case is reported in this paper.

for the past few weeks or perhaps months there had been digestive trouble such as mentioned above. There has been no recent chill, fever nor any of the usual symptoms of malaria, but on physical examination there is found an enlargement of the spleen and the blood examination shows the presence of malarial parasites.

The analysis of stomach contents after taking the usual meal shows a moderate or very decided hyperacidity. Exploring the stomach with the stomach tube in the morning after fasting overnight shows no food remnants from meals of the previous day, but gastric juice may be withdrawn which shows a high percentage of free hydrochloric acid. Repeated examinations of the feces show no occult blood and X-ray examinations give no indications of ulcer. I have seen these conditions associated

so frequently during the present year that I am persuaded that gastrosuccorrhea is one of the rather common manifestations of malaria which is otherwise apparently latent.

The following will serve as an illustrative case:

Mrs. M. F., age 32, married, four children, the youngest being 2½ years old; no miscarriages; menses normal. Father died at 50 of gallstones; mother living and in good health at 58. Patient has never had acute illness of any kind since childhood. In June of the present year had an operation for repair of laceration of perineum. In July of present year began suffering burning pain in upper abdomen and chest, this being most marked several hours after meals and being somewhat relieved by taking food. Has suffered somewhat from headaches, but has had no chills or fever at any time.

Physical Examination. — General appearance somewhat anemic; heart and lungs normal; spleen palpable below costal border on deep inspiration; no soreness to pressure over region of appendix nor gall-bladder. Examination of stomach contents after the Ewald breakfast shows the average quantity, with free hydrochloric acid 44; total acidity 68; urine normal. Blood examination shows malarial parasites present. The X-ray plate gives the picture of a normal stomach as may be seen from the accompanying plate. Aspiration of the fasting stomach showed presence of gastric juice with high percentage of free hydrochloric acid.

These patients get prompt and, so far as I have been able to observe, permanent relief when antimalarial treatment is given in connection with the usual measures for relief of the secretory disturbance.

My purpose in bringing these observations to your attention is to emphasize the fact that we as gastro-enterologists have our part to play in the solution of one of the greatest social and economic problems that confront the people of the South, that of eliminating the curse and handicap of malaria.

Inasmuch as the latent types of malaria are among the most prolific sources of infection for others, and since it is the manifestations of these types that bring these malarial carriers under our observation, it is peculiarly within our province to play an important part in the eradication of malaria from the South.

DISCUSSION

Dr. S. K. Simon, New Orleans, La.—As far as I personally know, such a direct causal relationship between gastric hypersecretion and malaria has not been hitherto stressed. A degree of caution, however, I think should be observed in this connection. I believe we ought to arrive at a fair understanding of the essential nature of a gastric hypersecretion and its possible confusion with the milder degrees of gastric stasis.

The point has come to my attention on repeated occasions that my malarial patients under the generally depressive influence of the malarial toxemia presented evidence of a delay of gastric motility of a first degree. I merely wish to call attention to the possible error of misinterpreting such a slight retention after a test meal with a hypersecretion of the gastric juice.

Dr. Knighton has observed this distinction, I am sure, in his cases, but it might be well for all of us to keep it in mind generally.

Dr. Anthony Bassler, New York, N. Y.—I would like to mention this: that we have had in the Polyclinic Hospital in the last two or three years several cases of malaria, patients with enlarged spleens brought in because of hemorrhage, sometimes diagnosed in advance, but generally suspected by the members of the staff, especially our surgical friends, as being a condition that required operation at once. It was not until we began to make blood examinations in cases with much enlargement of the spleen that the suggestion came that after all these symptoms might be in some way bound up with malaria. We have had opportunity to treat two cases successfully, and we have found that this is the way to control this hemorrhage, which is probably due to a ruptured virix, due to damming back the spleen substance or blood along the splenic veins, and these veins occasionally break, sometimes in the stomach, probably never in the duodenum.

Of course, we see very little malaria in New York as compared with observation of you gentlemen. Indeed, we sometimes feel that a person with malaria would be best off if he went as quickly as possible south of the Mason and Dixon line.

Dr. John L. Jelks, Memphis, Tenn.—I wish to say to the doctor that we have no Mason and Dixon line any more.

Dr. Knighton (closing).—There is nothing further to say in connection with the paper except that I think we all recognize that hyperacid secretions of the stomach and over-acidity is usually secondary. We hardly ever find the real cause of hyperacidity in the stomach itself. The way it occurred to me that some of these might be due to malarial infection was the fact that I could not find any cause outside of the stomach. I could find no evidence of chronic appendicitis, gall-bladder trouble nor anything of that sort that might be the cause, so when we found a moderate enlargement of the spleen, in order that the people in the South might be absolutely above suspicion as far as malaria is concerned, we began to have the blood of these patients examined, and it surprised us how frequently we got a report of positive malaria findings.

AUTHORS' ABSTRACTS
Medicine

What the American Soldier Now Fighting in France Should Know About Tuberculosis. S. Adolphus Knopf, M.D., Captain, M.R.C., U. S. Army, New York, N. Y.

After his return from France, Dr. Hermann M. Biggs, of New York, made the following statement published in *The Survey* of May 5, 1917: "In the beginning of this year it was estimated that about 150,000 French soldiers had been returned to their homes with active tuberculous disease and that more are constantly being discharged for this cause." Besides these 150,000, Dr. Biggs conservatively estimated that there would be altogether, including the civilian population, not far from 500,000 cases of tuberculosis in France to be dealt with if the war were to terminate at once. This was in January, 1917.

To allay the fears of the parents and friends of our boys in France, Dr. Knopf published in a number of medical periodicals (*Medical Record*, November 3, 1917; *Interstate Medical Journal*, November, 1917; *Woman's Medical Journal*, November, 1917; *L'Union Medicale du Canada* [French translation], November, 1917; *Western Medical Times*, December, 1917, and others) an article under the above title. In a precise and practical way he answers the following questions: What is tuberculosis, particularly the most common type known as pulmonary tuberculosis? What is the direct cause of tuberculosis? What are the early symptoms of pulmonary tuberculosis which can be recognized by the layman? What are the methods whereby tuberculosis is communicated from one human being to another, or from animal to man? How can these methods be prevented or the germs destroyed? What protects the healthy individual against contracting tuberculosis? What constitutes an hereditary predisposition to tuberculosis? How is the predisposition to tuberculosis acquired? What can the soldier in the field do to prevent becoming predisposed to tuberculosis? What should the soldier do so as not to spread tuberculosis? Should the American soldier in France greatly fear contracting tuberculosis after what has been said of the frequency of the disease among French soldiers and the French civilian population?

The knowledge of the prevention of tuberculosis is now so universal among medical men that there is no necessity for answering the foregoing questions in this abstract. In reference to the three following questions, however, which complete the article, there are some points which may be worth mentioning here:

The first of these questions is, "What can the American soldier, now in France, do to help in the fight against tuberculosis?" The American soldier is asked to convince his French comrades and civilian friends as tactfully as possible that the fear of night air, fixed in the minds of so many French people, is not at all justified, but that on the contrary pure night air is a very helpful measure in the prevention of tuberculosis. He is also asked by example to overcome the prejudice of many French people against drinking pure water and taking cold baths. He is taught how to instruct his French friends to become accustomed gradually to daily cold water applications.

In the next question, "What are the agencies now at work to help the French soldier who may have contracted tuberculosis?", Dr. Knopf tells of the activities in France of the Rockefeller Tuberculosis Commission, the Red Cross, and the French anti-tuberculosis agencies, which have combined to establish sanitoria, tuberculosis dispensaries, and preventoria, and engaged in a vigorous educational tuberculosis campaign.

The answer which Dr. Knopf gives to the last question is comforting: "What may we hope for regarding the tuberculosis problem in all civilized countries after the successful issue of this war of democracy against autocracy?" Since tuberculosis is as much a social disease as it is a medical disease, the prospect of combating the social causes will be brighter when militarism and autocracy will have disappeared from civilized countries. The countries which are now the enemies of the Allies will also become democratized and there will be a united Europe as there is now a united America. Social justice for all will then be the maxim, and there can be devoted to the betterment of the social conditions of all peoples the countless millions of dollars that are now spent for maintaining fighting armies because one country would not consent to disarmament, but wished to dominate the world by brute force and uphold the maxim that might makes right. Medical science will then once more be able to devote all its energy to the prevention of disease. All other branches of science, now utilized in the practice of war, will likewise be consecrated to the betterment and advancement of human happiness, comfort, health and the enjoymetn of life, and, with these blessings attained, the disease which has justly been called "the great white plague," one of the greatest enemies of mankind, will disappear.

Dr. Knopf will be glad to send this pamphlet to any physician who may have a son, brother, or intimate friend in the ranks whom he would wish to have a copy, in English, in French, or in both languages.

16 W. 95th Street.

The Explanation and Meaning of the Babinski Sign. Meyer Solomon, Chicago, Ill. Medical Record, Vol. 91, No. 24, June 16, 1917, p. 1029.

The Babinski sign is described and the method of testing for it given. The signs allied to it—known as Schafer's, Oppenheim's, Gordon's, Strumpell's and Chaddock's signs, respectively—are described. The Babinski sign may occur temporarily during unconsciousness or convulsions from any cause. It occurs pathologically, and as a rule permanently, in children past the stage of successful walking (up to two and one-half years of age) whenever there is a pyramidal tract lesion cutting off the central motor neurones from connection with the anterior cells of the fifth lumbar and first and second sacral segments. It occurs normally in infants up to the age of successful walking.

The author presents the views of Edinger on the development of the central nervous system

with the division into palaeencephalon (cord centres) and neencephalon (cortical centres of the pyramidal tract), the former being reflex and the latter controlling or inhibiting centres. By the pyramidal tracts the cortex controls the purely reflex, independent activity of the spinal cord segments and permits voluntary activities. Destruction of the pyramidal tracts cuts off the control of the higher over the lower centres, with a consequent return to older types of activity.

The views of Astwazaturof are given. The differences between the foot of man and the other primates are noted. Originally the feet had a grasping and scraping and not a purely walking function. In Babinski's sign we probably have a rudiment of the time when the great toe was excluded from the grasping and scraping acts by extension, thus allowing the other four toes free play. Since ontogeny tends to recapitulate the main phases of phylogeny, this satisfactorily explains why the Babinski sign is normal in the ontogeny of man (until the period of successful walking), only to be repressed in the further development of the nervous system, and to reappear when control of the cortex is cut off, transiently in unconsciousness or convulsions, and permanently in true pyramidal tract lesions.

The grasping reflex in the hand (mentioned by Janischewsky) is described, its significance, probable significance given, and it is compared to the Babinski sign.

The Roentgen Ray Treatment of Acne Vulgaris. H. H. Hazen, Washington, D. C. The Journal of the American Medical Association, Vol. LXIX, No. 12, September, 1917, p. 977.

Acne occurs almost exclusively in those persons who have overacting sebaceous glands. Any treatment that will dry the skin will help acne. Because of the specific effect of the Roentgen rays upon glands theoretically they should be useful. Practically this is true, many excellent dermatologists having reported good results. The technique employed by the author is practically that originally advised by MacKee. A dose sufficient to cause some browing, but just under the erythema dose, is given at three weeks intervals. Filtration has not been found useful, although theoretically its use is justified. An erythema must never be produced, as even one erythema might result in telangiectases. From four to eight doses may be necessary before permanent beneficial results are obtained, but temporary improvement nearly always follows either the second or third application. In addition to the X-ray exposures the diet has been watched and the "blackheads" removed, but no other local treatment is given the face. Thirty-four cases were treated. Of these, twelve were completely cured and fifteen so improved that they would not have more than one or two lesions a month. Only two cases were totally refractory. Relapses frequently ensue when the treatments have been discontinued too soon. All hair must be protected. Occasionally many freckles develop and there may be some browning. The first two exposures may result in the appearance of numerous small superficial pustules. Unquestionably Roentgen ray exposures give better and quicker results than any other form of treatment, but they must be given by one who is absolutely sure of his technique, or permanent damage may result.

The Four Plus Wassermann. D. M. Kaplan, New York, N. Y. New York Medical Journal, Vol. CV, No. 16, April 21, 1917, p. 728.

The article treats under three headings of the technical difficulties to be surmounted, gives advice under a second heading to the medical profession, and under a third suggests a less puritanical view of the question of syphilis at large.

Under technical difficulties, the question of careful standardization at the time of performance of the test is urgently emphasized. The variations in the guinea pig serum, in the sheep cells, the antigen and amboceptor are commented upon in short. Attention is drawn to the fact that barometric conditions and the differences in the behavior of cholesterinized and non-cholesterinized antigens is by no means accidental and should receive due attention. More than one antigen is always to be used and the complement of two guinea pigs each day when Wassermann reactions are performed. Less than 600-gram animals are preferably combined for work prepared the day before.

The medical profession is enjoined to pay particular attention to the fact that positive Wassermanns can be legitimately obtained in non-syphilitic diseases. The physician is warned against the too ready acceptance of the positive Wassermann and the subsequent hasty treatment of the patient with anti-luetic specifics. The treatment of paresis until after the Wassermann becomes negative after having been positive for a long time is considered by the author a mistake. He firmly believes that the protective forces that guard the life and well-being of the paretic include also his positive Wassermann.

The lay publis is to be instructed by competent public men, professional and otherwise, in the proper porphylaxis against syphilitic infection, and not only should the innocent and ignorant receive guarded instruction in sexual hygiene, but they should also be told of the danger in the hotel towel, restaurant dishes, the fruit from push carts, etc. In all, greater publicity should be given to this subject, which ought to be treated more from the point of view of social hygiene and the public welfare rather than as is the case now, from a harmful standard of pseudo propriety.

Students' Health Insurance at the University of California. Robert T. Legge, Berkeley, Cal. California State Journal of Medicine, Vol. XV, No. 4, April, 1917, p. 102.

The University of California, at its academic seat at Berkeley, has for the past decade maintained a students' health insurance system, which, with some modifications and co-operative effort, might be applicable to the community.

A fee of $3.00 per semester each student pays at the semi-annual registration period, which entitles him to a thorough and complete physical examination, vaccination, and to dispensary and hospital care. The staff is composed of nine members, men and women, who are specialists

in their particular fields. The dispensary includes X-ray, clinical laboratory examinations, oculist, orthopedic, urological, medical, and surgical service. The Hospital is equipped with 40 beds, modern operating room, and ten graduated nurses. In 1915 the number of bed patients was 672 and the dispensary cases 4,516. Of the latter, 71 % of the combined enrollment, averaging 7.8 individual treatments. To the uninformed it might appear that this large percentage of cases would indicate unusual morbidity in such a group, but as a matter of fact the purpose is to encourage early advice, practically applying the stitch in time, and also demonstrating that people require medical advice, care, and treatment before serious illness overtakes them,—a forcible argument for health insurance.

The number of surgical operations performed was 151. About 700 prescriptions were written for glasses, as 64 % of the freshmen were found to have errors of refraction.

A dental clinic is also connected with the Infirmary, where a nominal fee of $1.50 per hour is charged for dental service. Focal infections are prevented and detected by dental examinations. Only 82 men and 56 women out of 1,513 entrants had normal teeth. Postural defects, flat teeth, diseased tonsils, etc., are discovered at physical examinations. These are corrected, thereby increasing the students' efficiency.

Compulsory courses in hygiene are required of all freshmen at the first semester. These are given by members of the Department of Hygiene, who are also on the staff.

Group medicine is practiced, much facilitating our system of curative medicine. This successful system of preventive and curative medicine for college students should be an argument to offer to the whole of society.

Botulism: The Danger of Poisoning from Vegetables Canned by the Cold-Pack Method. Ernest C. Dickson, San Francisco, Cal. The Journal of the American Medical Association, Vol. LXIX, No. 12, September 22, 1917, p. 966.

During the past few years there have been several outbreaks of botulism in the United States, the majority of which were caused by home-canned vegetables and fruits. The mortality in these outbreaks was 67.9 %.

Because of the widely advertised propaganda urging that large quantities of vegetables and fruits be canned at home, a series of experiments was instituted to determine whether the methods that have been recommended are efficient if the raw material happens to be contaminated with spores of the B. botulinus. Jars of corn, peas and string beans were canned according to the directions given in Farmers' Bulletin No. 839 (U. S. Department of Agriculture), which is entitled "Home Canning by the One Period Cold-Pack Method." Each jar was inoculated with an emulsion of spores of the B. botulinus before being sterilized by immersing in boiling water for from two to three hours. Within three weeks it was noted that the material in the jars had spoiled. Cultures of B. botulinus were recovered from every jar and the presence of virulent toxins was demonstrated by animal experiments.

The experiments show that the wash boiler method of sterilization for one period as recommended by the instructions for canning by the cold-pack method is not efficient if the raw material is contaminated with spores of the B. botulinus.

The toxin of the B. botulinus is destroyed by boiling. Hence all home-canned food should be boiled before it is eaten. All canned food which shows any signs of spoiling should be discarded.

Summer Diarrhea. V. E. Lawrence, Ottawa, Kansas. Clinical Medicine, Vol. 24, No. 6, June, 1917, p. 422.

The writer emphasized the depresing effects of heat as a cause of summer diarrhea, stating that in his opinion the watery flow is often merely a "night sweat" from the bowels resembling the ordinary night sweat and produced from the same debilitated and relaxed condition. The patient should be given relief by removal of the cause. The house may be kept cool by closing the doors and windows at 6 A. M., thus retaining the cool night air. This, however, can be done only in two-story houses. Damp sheets hung about the rooms help, and also frequent cool baths.

Parents are warned against warm clothing and the avoidance of woolens. Children produce more animal heat than their seniors and should be dressed more lightly, avoid warm cribs and beds.

It is important to remember that acetonuria is often present. In bottle-fed children the milk should be sterilized for fifteen minutes. Coagulation of milk can be prevented by diluting with boiled water one part milk to five of water.

The following prescription is an old but useful one in summer diarrhea:

Sodium carbonate dram I.

Sodium sulphocarbolate drams III.

Tr. hydrastis drams VI.

Aromatic syrup of rhubarb enough to make ounces VI.

M. Sig.—Dose for adult, one tablespoonful every two hours until stools become normal. For children, one teaspoonful.

Sodium phosphate should not be forgotten in this disorder. The doctor must see to it that the bowels are purged of all decomposing contents, but must not purge when nature has already done so. Otherwise, the patient may be hastened into collapse from exhaustion. Digestants should assist tardy or imperfect digestion.

In all cases of bowel trouble in children water should be offered before giving milk, as the patient may drink the milk, not because it needs food, but to allay thirst. By so doing the digestive tract is not burdened with useless and harmful food.

TROPICAL DISEASES AND PUBLIC HEALTH

THE RELATIVE VALUE OF THE PUBLIC HEALTH NURSE IN THE SOLUTION OF THE TUBERCULOSIS PROBLEM*

By W. L. Heizer M.D.,
Executive Secretary, Kentucky Board of Tuberculosis Commissioners,
Frankfort, Ky.

The final solution of the tuberculosis problem presupposes the following basic propositions:

1. A universal knowledge of the cause, prevention and treatment of the disease;

2. A willingness and determination by the infected individual to apply that knowledge, or the necessary authority under the law through efficient agencies to require that individual to apply that knowledge;

3. A reliable and constant means of determining the presence of tuberculosis in every individual; and

4. An effective and permanent or governmental arrangement for creating and maintaining a means for universal knowledge of the cause, prevention and treatment; for bringing infected individuals under treatment, and for determining the presence of the disease in every individual.

The cynic may well add just here that we would just as well quit the fight, for we are assuming impossibilities, and he would be right in his assumption of the impossibilities, but wrong in his conclusion to surrender. The premises are correct and all logical, consistent efforts made to eradicate tuberculosis, or any other communicable, prevalent disease must work upon this basis outlined. While it is conceded the ideal will never be reached,—the complete elimination and control of tuberculosis,—many and effective efforts can be made to reduce its incidence.

No definite line of work can be separated clearly in its effect of educating the public from other kinds of work which are undertaken primarily for that purpose. The institutional care of the tuberculous gives a large return in educational value, but differs materially from the work done by the public health nurse, which gives larger educational returns and is capable of wider and more economical application.

To determine some vital factors in the institutional care of the tuberculous, I addressed a letter to each of the superintendents of such institutions in the United States which represented thirty-six states. There was a total of 457 sanitoria in these states. They have a total bed capacity of 36,992, and assuming a 6-month period of hospitalization, a patient capacity of 73,984.

The population represented was 84,843,724, or an average of 5,319 people for each bed provided.

Based upon an assumption of 10 active cases for each death from tuberculosis, there were in these states 1,245,500 cases, and the per cent. of those which could be treated in all of these sanitoria, if all beds were constantly occupied, was 5.9.

167 institutions reported 26,023 beds, an average of 156.

161 institutions reported 78,378 annual new bed patients, an average of 486 to each institution.

137 institutions reported an annual average of 179 days' treatment.

159 institutions reported the cost of plants and equipment $39,292,846, an average of $247,124.

The average minimum charge per day per patient of 163 institutions reporting was $1.68, and on account of the increased cost of living since April of this year, when the report was made, this must necessarily be higher at the present time.

For comparative study each of these groups was tabulated separately as to the number of beds, "Exhibit A;" number of new patients, "Exhibit B;" number of days in institution, "Exhibit C;" cost of plants, "Exhibit D;" cost of operating, "Exhibit E;" and minimum charge per patient per day, "Exhibit F." These tables follow:

*Read in Section on Public Health, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

THIRTY-SIX STATES ANSWERING QUESTIONNAIRE

STATES	Tuberculosis Sanitoria	Total Capacity	State Population	Population to Each Bed	Estimated Cases	% by Sanitoria Reached
1. Arizona	11	361	247,299	685	3,630	19.
2. Arkansas	1	114	1,713,102	15,026	25,140	9.
3. California	25	1,312	2,848,275	2,171	53,780	4.
4. Colorado	20	1,879	935,799	487	16,520	22.
5. Connecticut	12	897	1,223,583	1,364	17,810	10.
6. Delaware	2	70	211,598	3,022	1,570	8.
7. District of Columbia	2	195	358,679	1,839	7,370	5.
8. Georgia	3	348	2,816,289	8,092	41,340	1.7
9. Illinois	18	2,772	6,069,519	2,911	87,900	6.
10. Indiana	13	393	2,798,142	7,119	41,000	1.9
11. Iowa	6	485	2,221,038	4,579	32,600	2.
12. Maine	6	219	767,638	3,505	9,200	4.
13. Massachusetts	42	2,920	3,662,339	1,264	51,180	11.
14. Maryland	12	1,054	1,351,941	1,282	27,090	7.
15. Michigan	16	799	3,015,442	3,774	27,800	6.
16. Minnesota	19	1,301	2,246,761	1,726	23,800	10.
17. Missouri	9	828	3,391,789	4,096	50,150	3.
18. New York	68	8,965	10,086,568	1,125	166,430	10.
19. New Jersey	21	1,406	2,881,840	2,049	43,510	6.
20. New Mexico	19	1,367	396,917	290	5,820	46.
21. North Carolina	12	515	2,371,095	4,604	11,610	8.8
22. North Dakota	1	75	713,083	9,507	10,590	1.4
23. New Hampshire	3	150	440,584	2,937	5,410	5.5
24. Nebraska	2	46	1,258,624	27,361	18,470	.5
25. Ohio	21	1,224	5,088,627	4,157	65,490	3.
26. Pennsylvania	28	3,803	8,383,992	2,204	10,212	7.4
27. Rhode Island	6	566	602,765	1,060	9,360	12.
28. South Dakota	3	79	680,046	8,608	9,980	1.6
29. South Carolina	4	74	1,607,745	21,726	23,600	.6
30. Tennessee	7	427	2,271,379	5,319	32,200	2.6
31. Texas	13	530	4,343,710	8,195	63,770	1.6
32. Virginia	10	366	2,171,014	5,931	39,140	1.8
33. Vermont	1	43	362,452	8,429	3,680	2.
34. West Virginia	3	164	1,359,474	8,289	19,950	1.6
35. Wisconsin	12	871	2,473,533	2,839	24,510	5.2
36. Washington	6	374	1,471,043	3,933	12,460	6.
						5.90
	.....	.....	.....	191,495		
	.....	.....	.....	5,319		
	457	36,992	84,843,724			
		2				
		73,984			1,245,500	5.9
Total, United States	557					

"EXHIBIT A"

167 institutions reported 26,023 beds. Average, 156.

"EXHIBIT B"

161 institutions reported 78,378 annual new bed patients. Average, 486 to institution.

"EXHIBIT C"

137 institutions reported an annual average of 179 days' treatment.

"EXHIBIT D"

159 institutions reported cost of plants and equipment $39,292,846.00. Average, $247,124.00.

'EXHIBIT E'

136 institutions reported an average cost of operating plants of $6,464,567.52. Average, $62,-239.46.

"EXHIBIT F"

Average Minimum Charge Per Day Per Capita. 153 institutions reporting, give an average of $1.68.

Total number of states represented in this report	36
Total number of tuberculosis sanitoria in the above	457
Total capacity of above sanitoria	36,992
Total population of the 36 states represented	84,843,724
Average annual number of deaths from tuberculosis in the above 36 states	124,550
Counting 10 times as many infected people (active), what per cent. was reached with sanitoria?	5.9

REPORT RECEIVED FROM 207 SANITORIA

"EXHIBIT A" — No. of Beds in Institutions.

Under 10 beds	2		
10 beds to 15	2		
15 beds to 25	17		
25 beds to 50	38	59	Group 1 "A"
50 beds to 90	29		
90 beds to 125	19	48	Group 2 "A"
125 beds to 200	23		
200 beds to 300	16		
Over 300 beds	21	60	Group 3 "A"
Not reporting	40	207	Total Institutions

"EXHIBIT B" — Number of New Patients Treated Annually.

Under 10 patients	4		
10 to 15 patients	4		
15 to 25 patients	6		
25 to 50 patients	24	38	Group 1 "B"
50 to 90 patients	25		
90 to 125 patients	16	41	Group 2 "B"
125 to 200 patients	24		
200 to 300 patients	14		
Over 300 patients	44	82	Group 3 "B"
Not reporting	46	207	Total Institutions

"EXHIBIT C" — Average Number of Days Each Patient is Treated.

Under 60 days	4		
60 to 90 days	13	17	Group 1 "C"
90 to 120 days	14		
120 to 150 days	23		
150 to 180 days	28	65	Group 2 "C"
180 to 240 days	38		
Over 8 months	17	55	Group 3 "C"
Not reporting	70	207	Total Institutions

"EXHIBIT D" — Total Cost of Plants

Under $ 10,000	5		
$ 10,000 to 20,000	12		
20,000 to 30,000	8		
30,000 to 50,000	30	55	Group 1 "D"
50,000 to 75,000	11		
75,000 to 125,000	25	36	Group 2 "D"
125,000 to 200,000	21		
200,000 to 300,000	15		
300,000 to 500,000	14	50	Group 3 "D"
500,000 to 800,000	8		
800,000 and over	10	18	Group 4 "D"
Not reporting	48	207	Total Institutions

"EXHIBIT E"

Total Annual Cost of Operating Plant.

Under $ 5,000	2		
$ 5,000 to 8,000	8		
8,000 to 12,000	6	16	Group 1 "E"
12,000 to 17,000	21		
17,000 to 24,000	10		
24,000 to 32,000	20	51	Group 2 "E"
32,000 to 41,000	10		
41,000 to 50,000	7		
50,000 to 65,000	9	26	Group 3 "E"
65,000 to 90,000	13		
90,000 to 120,000	9		
120,000 to 160,000	12	34	Group 4 "E"
160,000 to 200,000	1		
200,000 and over	8	9	Group 5 "E"
Not reporting	71	207	Total Institutions

"EXHIBIT F"

Minimum Charge Per Patient Per Day to Meet Actual Expenses.

Under $ .75	5		
$ .75 to 1.00	5		
1.00 to 1.20	17	27	Group 1 "F"
1.20 to 1.40	21		
1.40 to 1.50	19		
1.50 to 1.55	14	54	Group 2 "F"
1.55 to 1.60	3		
1.60 to 1.65	6		
1.65 to 1.70	7		
1.70 to 1.80	18	34	Group 3 "F"
1.80 to 1.90	6		
1.90 to 2.00	5		
2.00 to 2.15	10	21	Group 4 "F"
2.15 to 2.30	7		
2.30 to 2.45	1		
2.45 to 2.60	2	10	Group 5 "F"
Over 2.60	7	7	Group 6 "F"
Not reporting	54	207	Total Institutions.

No one questions the value of the public or private institution to the patient who can recover, or to the public for patients who can not recover, or are financially dependent, but as a winning factor in the eradication of tuberculosis it assumes a minor importance, and it must be regarded as the end-result of proper enlightenment of the people as to the cause, cure and prevention of the disease—the fruitage of intensive educational work with the individuals of society and communities, counties and states. This is particularly true of a national or a state institution. The municipal, county or district sanatorium near the homes of the victims assumes a larger aspect of usefulness and is likewise erected, equipped, operated and continued in a definite relation to the extent and thoroughness with which a working knowledge of the disease is given to the units of society.

Waverly Hill's Sanatorium, of Jefferson County, Kentucky, and Henderson County Sanatorium, of Kentucky, furnish two typical examples of this truth. For many years Louisville, in Jefferson County, waged a campaign against tuberculosis with a public health nurse service and through the schools and newspapers and boards of health until there arose a demand for a permanent institution on a taxation basis. The city and county now operate it in conjunction with an effective

visiting nurse service in the city with about twenty-four nurses under competent supervision. As a result of this work tuberculous cases are found, visited and induced to take treatment, and a waiting list is constantly reminding the officials of an inadequate means of handling its tuberculous population.

In Henderson County an institution of twenty-four beds was erected as a result of a short, intensive campaign before the voters of the county. The general educational propaganda of the State, City and County Boards of Health and the Tuberculosis Commission of the State had aroused an interest and the campaign was successful in crystalizing public sentiment into some definite action, in this case, the sanatorium. The county has no public health nursing service either in its city of 10,000 or in the county, and no means of determining the infected population, and as a result the institution is running two-thirds capacity or at the rate of thirty-two patients per year at a cost of a compulsory annual appropriation of $5,000.00 and some money from pay patients.

There are, based on the death rate and the assumed ratio of 10 active cases to each death, 570 tuberculous citizens in the county, only 5.6 % of whom are reached or treated at a cost of $203.00 each for only six months' attention.

Were this money expended for public health nurse service, five nurses and transportation could be used, and by dividing the county into five convenient districts each of the 570 tuberculous persons, were they found, could be visited once a week in their homes for the entire year, and sufficient time would remain for the nurses to visit the schools for health demonstrations and examinations, and bedside attention could be given to typhoids and other health work done.

So there has come to our attention the importance of the public health nurse and the tremendous value, educational, economic and otherwise, of ministering to infected individuals in their own homes. Unquestionably the move is in the right direction, and the nurse assumes a major factor in a winning fight against tuberculosis.

The chief advantages of starting a health campaign in a county which has done little before, by employing competent public health nurses are: the natural inclination of a community to spend a less amount of money (a false economy) to accomplish a public service; the popular appeal to the public by the ministrations to the sick; the prenatal care in selected cases; a quick appreciation of the value of public health work by reason of its publicity secured as result of appeals for aid to churches, fraternal organizations, the city and county government; when a nurse is employed by a county health and welfare league, as is the policy of our Commission, or a similar organization with a large county membership, it is a logical and certain means of crystalizing such an awakened public health sentiment in the formation of a permanent county, city or state health department with efficient officers and sufficient equipment and assistance to make real work permanent, constructive and effective.

Public health nurse work, however, without adequate supervision is not productive of the best results and may at times become hurtful in that it can easily lead the people to a sense of false security with a corresponding failure to provide adequate means of protection and if placed in charge of a non-medically trained nurse with a liking for assumption of such learning, the antagonism of the medical profession is secured with a consequent loss of interest, belief or faith of the people in public health work.

Home visitation by the nurse assumes also an accurate diagnosis contributed by the medical man, a home provided for the patient and maintenance for him while sick. In many instances all of these may be lacking, and growing out of this situation is the demand for institutional treatment or isolation and care. It is, therefore, as illogical and disastrous to rely solely upon the nursing service as upon institutional or general educational methods of handling the problem.

As part of a practical solution of the relation of the public health nurse in solving the tuberculosis problem we have placed before our Commission, of which the Governor of the State is president, the following plan, which has been adopted,

and steps have been taken by the Governor to secure the approval of our General Assembly, which meets in January, 1918.

The Commission is asking for a sufficient increase in its annual appropriation to place in operation two traveling tuberculosis units. Each unit is to be composed of a tactful, successful, competent, high-grade medical man, who has had special training in dignaosis of tuberculosis; a real, trained public health nurse, who is tactful, and whose very presence insures confidence and co-operation, and an assistant to do the clerical and microscopical work. It is proposed that this unit will spend not less than three months in each county visited. A general educational campaign will be carried on through the press, the teachers, physicians, women's clubs and the ministry in advance of its visit. It will be announced that any citizen of the county, if accompanied by his family physician and a member of the family, can have a free, expert examination made to determine the presence of tuberculosis.

The itinerary will be so arranged by towns and neighborhoods that it will be convenient for people to come, and a second visit at least must be made to each point before leaving the county. Physical examination is made with the help of the doctor. This will give every physician of the county an opportunity to review, as in a post-graduate course, the most practical and the best methods of examination. No honest physician will object to this procedure, and most of us would be glad of the opportunity. If the germ can be found, the patient and the member of the family are shown the seed of their disease, and thus one of the hardest of the problems is solved, for the patient is made to know that he has the disease.

The patient is then accompanied home by the public health nurse, who will institute such a method of home treatment as is consistent with their financial and social position. A fresh air porch can be constructed or used, instructions given as to the disposal of sputum, the use of cups, the care of eating and drinking utensils, the necessity of isolation, the value of food, rest and air. A thermometer should be left at the home, its use taught and a clinical chart kept by some member of the family.

At the second visit it will be noticed whether the patient is carrying out the treatment, the gain or loss in weight, the mistakes which are being made, and the necessity for further advice. It is not intended to replace the professional care of the family physician by the work of the nurse, but at all times the unit must place as of first importance the value of the physician in the care of the patient.

It is believed that this work will be an education to the patient, to the family and to the entire neighborhood, and that after such a campaign of not less than three months, during which time schools will be visited, inspections made, insanitary conditions noted, health lectures and lantern-slide exhibitions made, that county will be ready to organize some sort of a health and welfare league which can employ a full-time public health nurse, and from this beginning it will be but a logical and constructive step to the organization of a real county health service as a part of the county government, with a full-time health officer, one or more public health nurses and sufficient equipment, under state or governmental supervision.

DISCUSSION

Dr. G. G. Altman, Helena, Ark.—In the privilege of listening to this excellent classic paper by Dr. Heizer I feel that we are given a treat, especially those of us who are interested in the problem of tuberculosis. He has opened a field of thought that will quicken our intellect and make us think ,and we would do an injustice to our Alma Mater if we did not take this lesson home with us. It is a great big problem, and any sensible method that touches the keynote of the situation ought to be received with open arms, and surely this paper, which shows so much thought and with so much practical evidence of success, is worthy of serious consideration.

Dr. Alva Carnes, Dallas, Tex.—Dr. Heizer emphasizes most thoroughly the importance of education, and that runs through the whole line of public health work. I believe that when we can get the people to understand these things that we can have that hearty co-operation that has resulted in the two counties the doctor mentioned.

One question I would like to ask, that is of the 5,300 inquiries he speaks of. Was that a Nation-wide inquiry?

Dr. Heizer.—Thirty-six states.

Dr. Carnes.—That shows, then, the absolute necessity of a Nation-wide education along these lines. I believe that when we can instruct the

people and show them from an economic standpoint that it is to their interest to do this, we shall be in the dawn of better days. I was very much interested in this from the fact that I am in position now to enter into work not only in the county but in the state, and I believe such papers will result in Nation-wide education that will bring good results.

Dr. James A. Hayne, Columbia, S. C.—We have had tuberculosis state sanitoria in South Carolina and also county sanitoria. When we built our sanitorium we told the Legislature that we would only take incipient cases of tuberculosis. We thoought that was simple, but to our astonishment we found that out of one hundred, all that was sent the first year, we got four incipient cases, and the other ninety-six were far advanced cases. So we had to change the word "incipient" to "ambulant" or walking cases. Even with that the doctors did not seem to grasp the point, and if a man could walk to the station he sent him as an ambulant patient. With the plan that Dr. Heizer suggests, of having a unit in each county, we will go around and revive in the minds of the doctors what they learned in college as to physical diagnosis, and perhaps we can get sufficient incipient cases to fill the seventy beds that we have. At present we have had twelve incipient cases and the balance are hopeless cases. Our plan was to have the hopelesss cases taken care of in the counties; that is, to make them comfortable, and let them die as comfortably as possible, and remove the danger from the children and babies of the family. I do not believe in the adult transmission of tuberculosis. I do not believe that one adult would take tuberculosis from another adult except under exceptional circumstances, and I do think this disease phobia, this horrible fear of a man with tuberculosis, this hesitancy to tell him the truth about his condition, has been the cause of untold heavy mortality. We do know that if a child gets a tuberculous germ, later on this germ will develop the disease. If we can get that into the minds of the people we shall have accomplished a great deal, and I believe Dr. Heizer's plan is so good that I shall adopt it as my own and father it when I go back to South Carolina.

Dr. John A. Ferrell, New York, N. Y.—This is most interesting to me in that it seems to coincide in almost every particular with the ideas of those men who are primarily interested in getting at the root of the problem. That is to say, Dr. Heizer stressed the necessity of carrying on concrete demonstrations as a means of educating the people. That is to be the beginning, the forerunner of the development of well-organized county organizations which is the basis or nucleus for each county. And these county organizations, in turn, will have long arms that will reach out into the various townships and school districts or even communities, and come in contact with the individual homes. He feels that when he can go into the individual homes, if proper precautions can be taken in the home by those who have actually contracted tuberculosis and for the protection of those who have not become infected, much will be accomplished. That general scheme, that general program for attacking that problem, coincides as you recall almost identically with the program that was outlined yesterday for attacking soil pollution disease. That is to say, there will be provided health nurses, inspectors, or whatever you care to call them, who will go into the individual homes. I should be interested to know how much, in addition to seeing that a proper and wholesome water supply is provided for each family, by these inspector nurses—how much in addition to having each family provide itself with the proper sanitary arrangements, could be done toward teaching these people in their homes, what is necessary in the way of housing or ventilation, of sleeping porches, and of what the people should eat.

I am not posted on the treatment of tuberculosis as it is carried out. I have a general impression that it involves proper diet, proper sleeping quarters, and proper rest. The little I know about pellagra treatment is that it includes the proper kind of food and requires that it be a well planned ration, and that it be prepared properly. It seems, then, that tuberculosis and pellagra have a good deal in common. It seems to me in carrying on this work that there is something in common in the cure of these two diseases which involves the question of diet, and that a great deal could be done for those people who we hope will never develop tuberculosis or pellagra by going into the home and laying out a well-planned ration for each family or laying out what constitutes proper housing facilities and proper hours of rest, and getting each family to adopt some sort of program for raising chickens and eggs, and providing themselves with milk and other foods that are necessary to keep vitality in the individual,—get the family to realize this point. If this could be done and done effectively, would it not greatly diminish the number of tuberculosis cases that will become active and that will be expensive to care for later?

Dr. Paul H. Ringer, Asheville, N. C.—As a rule I do not think there is any doubt that, taken throughout the Nation, people still regard the fight against tuberculosis as the doctor's fight. Until they change their viewpoint and realize it is essentially the people's fight, we shall not meet with any great amount of success. It is through such plans as Dr. Heizer has advocated in his excellent paper that we have to make it less a doctor's fight and more a people's fight. Many individuals feel that given a case of tuberculosis, one of two things is open to the patient—either prompt removal to a health resort or institution, or death. They disregard the so-called home treatment of tuberculosis, which, no matter how widely the number of sanatoria or health resorts may be multiplied, will still remain the backbone upon which the treatment of tuberculosis must be launched and devleoped. But until this home treatment is brought into the heart of every community, and until its intense practicability coupled with very trifling expense is made clear and definite, and also until it is impressed upon individuals that this home treatment must be continued for a long period of time (because all things being equal, the individual that can give the greatest amount of time to recovery from tuberculosis has the best opportunity for

success), I say until all these things can be brought about, we can not meet with the success that should be ours, and it is the utilization of such plans as Dr. Heizer has outlined that will bring the question of tuberculosis vividly home to every family throughout the Union, and when that is once brought home, in the course of the next quarter century we shall see, according to statistics, a wonderful and marked decrease in this disease, which, after all, is wholly preventable.

Dr. A. T. McCormack, Bowling Green, Ky.—There are already twenty-six counties in Kentucky which have public health nurses, all-time public health nurses. People are already trying to carry out the things that Dr. Heizer is telling about, and we are having co-operation in these units. In some places we have one public health nurse to twenty thousand people, but we have not that many in some communities, or in fact in some counties. In Mason County, for example, where a great constructive work has been begun, the public health service sent a unit into the County for the actual investigation of health conditions in every house in the entire County. Naturally, this investigation was not in accordance with the practical lines of Dr. Heizer's suggestion. It was simply a statistical investigation, so that, like the census bureau, every single item affecting the health should be taken. But, on the other hand, when you attack the problem with a view to relieving the condition that such an investigation would find, the practical suggestion that Dr. Heizer has adduced from his work can then be used. The value of having a unit which will go to the houses is not to get the statistics, but to actually correct the conditions that are wrong in that house, and that is what we are after. This unit is not to stop with simply advising the people what they should do in the house; they will show them how; they will show their laborers how to build privies, their carpenters how to build sleeping porches, their cooks how to cook food. They will not tell them how, becuase that will not do any good; the only people who can be told already know; but the people of these counties, in order to live healthy lives, must have an actual demonstration of the exact method of doing it. You have to show them. We must learn and we must also teach the people that education in this country at the present time is not for the purpose of making citizens, never has been; not for the purpose of making lawyers or making scientists; it is solely for the purpose of making teachers; and if a man will go to school every day until his death he will never be anything but a teacher. Most of these people are just average individuals; they are not rich, and if you teach these people it must be in their homes; if you teach these people to cook, you must do it in their homes with the things that they have. No graduate of a medical school in that part of the South will ever make a living out of what he learned in school unless he teaches the people. We must teach them to live, and Dr. Heizer, to my mind, has begun there a wonderful work; he has laid a foundation; he has boiled the whole thing down and presented to us a concrete proposition that is already demonstrated; and he has shown that he can deliver the goods at a comparatively small per capita expense, and by the multiplication of these tuberculosis units which he suggests, and other secondary units, he makes possible the organization of a health department. As I said yesterday, the organization of a health department can not be made until we have the backing of the Federal health department; the Federal health department is an essential element. The state is just as important because they have to furnish aid, and unless the state and county can come to their assistance, they will be poor to the end of time. Most poor counties are poor because their citizens are unhealthy. If the state and Nation will start the formation of these units they will soon be in a position to have adequate health organizations and adequately to keep themselves well. The wealthy counties are kept well because they are wealthy counties, but the poor counties must have help. I think myself that Dr. Heizer's suggestion is the practical evolution of all that has been done in sanitary science in the South. It is a long step toward the solution of the problems that confront all of us. It has practical value and it is one of the most important things that have ever been presented to any medical meeting.

Dr. H. R. Carter, Assistant Surgeon-General, United States Public Health Service, Baltimore, Md.—Any one who has been long engaged in sanitary administration knows that the crux of the whole thing, the foundation of his work, is the economical question. I am an old man and I have been long in this work, and never yet have I seen a health organization with money enough to do all the sanitary work that was needed. It behooves us, then, especially so to arrange our work as to get the biggest dividend per unit of expenditure. In this line, tuberculosis has been our *bete noir*. Chapin, of the American Medical Association, investigated different classes of sanitary work and said that we got less dividend per dollar of expenditure in the fight against tuberculosis than in any other sanitary effort. I shall not speak of Fishberg's work, which implies that you get nothing. You do get something, but you get less benefit per unit of expenditure than in the fight against hookworm, typhoid, malaria,—or than in some other kinds of sanitary work. Dr. Heizer, then, is to be more than congratulated. His plan is one of an experienced administrator who is trying to make his dollar go further than ever a dollar did before in this work. I believe it will. I think his plan, followed out, will remove this reproach from the work against tuberculosis, and that you will get an adequate return for anti-tuberculosis work as well as from other sanitary work, possibly more than you do in some others. It is the paper of an experienced administrator, a man who has tried and who has not failed.

Dr. L. B. McBrayer, Sanatorium, N. C.—The discussion of the paper has hinted at the fact that it is unwise and not economical to separate one unit of health work from another in its entirety. Dr. Heizer's most excellent paper is open to the criticism that he is guilty of the thing with which he charges others, to wit, in his unit he

plans three months in a county and, working two units, they cover eight counties in a year, and at that rate it would take him fifteen years to cover his State. It is unwise for us to single out one thing by which we will attack the Germans. It would be unwise for us to decide that we will make our campaign against the Kaiser with aeroplans altogether, and, likewise, with any other unit of warfare. But we must attack the Kaiser from every angle if we win. It is the same way with tuberculosis. The thing we want to accomplish in tuberculosis is this: first, to find every case of tuberculosis. That has been touched upon in the discussion and in the paper. Second, we must so supervise every case that it will not become a menace to others, and we must give that case the best opportunity possible for recovery. That is what we are all driving at, and we shall make a very serious mistake if we attack this great problem with any one unit of warfare.

Dr. Carter speaks of the economic side of the fight against tuberculosis. I noticed the other day some records from a state in which the decrease in death rate from tuberculosis in a recent year was greater than the decrease from all other preventable diseases put together. So that does not seem so bad.

In order to carry out the policy I laid down, it is necessary to have a program of far-reaching influence, and the first thing I would say we should establish would be a bureau of tuberculosis in the state board of health. At the Southern Congress on Tuberculosis, at Chattanooga last Friday and Saturday, they there outlined a program which included this bureau on tuberculosis in the state board of health, also a state sanitorium—one, at least; a sanitorium in every county in the state, and in the poor counties our Chairman spoke about, perhaps combining two or three counties. And I might say that in the South these county sanitoria certainly would be expected to take care of the Negro. Whenever you discuss health work everybody goes back to the whole-time county health official, and there is no getting away from it—the county health department with a whole-time county health officer is absolutely necessary, and that official should have assistance — "ants" and "ance." Among the assistants should be a public health nurse, and they are not the least part of it, either, and that is where the doctor's paper comes in. A whole-time health officer with his public health nurse—and we have only one for twenty thousand—is doing a lot of work in a public health way. But one for twenty thousand is a big job—too big. In speaking of sanitoria, we should not forget the private sanitorium — the more we have the better. Then there should be a county dispensary with the county health officer as examiner, and this county dispensary should be a movable dispensary. The county health officer and his nurse should go out through the county and hold dispensaries, today in one part of the county, next week in another, all through the outlying townships until he covers every township. Then, as suggested here yesterday, after he has covered the county six months with his movable dispensary, he can hold his dispensary certain days in the week and certain hours in certain days in the county towns. When that machinery has been put into motion effectively, sufficiently manned, sufficiently financed, then those principles laid down in the beginning of my remarks will come to be a reality, and not until then.

Dr. Ferrell is on his job. He listens to this splendid paper and it immediately occurs to him that while the fellows are there, what is the matter with soil pollution? I take off my hat to Dr. Ferrell, but some of the rest of us feel that while we are going into the homes looking out for soil pollution, teaching the folks how to build surface closets properly, that we might also look into tuberculosis, and look after sleeping porches, etc. But when these county organizations, such as I have outlined, have been put into effect, and such as Dr. Washburn and some of the others are putting into effect in ten counties in North Carolina right now—when that is a reality throughout the country, the public health nurse and the inspector, as they go to the individual homes, will not only look after soil pollution, but tuberculosis and everything else that can affect the home in the way of prevention of disease. And to our minds the ideal will almost have been attained at that time.

Dr. Heizer (*closing*).—The conclusion to establish this unit was primarily the result of the splendid and practical work done by the representatives of the State Board of Health and the International Health Commission. I am glad especially to hear Dr. Carter, who is a man of rich and varied experience, endorse the movement. May I say that I believe the Legislature of Kentucky committed an error in the creation of a separate tuberculosis commission—that is, separate from the State Board of Health? With Dr. McBrayer, I think all of the tuberculosis work in the State should be done as a bureau of the Health Department. We have tried to co-operate with the State Board of Health in so far as possible by putting the office in with the State Board of Health and doing most of the work there. As an example of what can be done, I shall mention that in sending out death certificates, birth certificates, undertaker's report blanks, we put in blanks requesting the names and addresses of all the people who have lived in the same house or been associated in business with somebody who died of tuberculosis. Then upon receipt of this information we send to them such anti-tuberculosis literature on the prevention, treatment and cure of the disease as we have. That is a piece of work that can not be done outside the office of the State Board of Health, where these records are kept.

We try to be entirely fair in the discussion to the state, county and district sanitoria. The building, equipping and filling of these institutions presuppose a desire on the part of the people to go to these institutions, and that presupposes a familiarity with methods of treatment and prevention, and after all, we get back to the basic proposition of educating the individual units of society and the principles outlined by Dr. McBrayer and in the opening paragraph of the paper. May I be permitted to say that I believe the county or district sanitoria in any state

should always receive aid from the state in their building? The county and district tuberculosis problem is not their own problem, but a part of the state problem, and the state is responsible to a great degree for that problem within the counties, and it seems to me that the sanitorium should not be erected in any district unless some provision were made for the adequate treatment of out-state patients, and that the state in assisting in building and maintaining the sanitorium should have the privilege of the use of a certain number of beds. In other words, if the state assists in building one hundred beds, they should reserve fifteen or twenty beds for state patients. In that way there will be a more equitable distribution of aid and of money.

I would say in answer to Dr. Ferrell's remark that I have presumed that we can not do anti-tuberculosis work without doing general health work any more than you can do general health work without doing anti-tuberculosis work, or any more than you can take a very dirty individual and wash one arm and call him clean. The whole job must be done together. So in this traveling unit we not only will pay attention to the tuberculosis victims of the county, but we will insist upon clean rooms, upon the proper kind of outhouses, we will look after any sort of insanitary conditions and prevent these preventable diseases, and in our public health lectures and demonstrations before the schools we will teach proper methods of living as to eating, rest, exercise and personal hygiene. I believe with this kind of a campaign we can revolutionize the idea that you get less for every dollar spent in anti-tuberculosis work than in the expenditure of money for other health work. How can you measure the interest that will be created in one individual in that county? How can you measure in dollars and cents the effect that a county health welfare league will have in doing all sorts of health work, or any other sort of educational work? I am inclined to put a great big question mark after the statement that less value is received by the expenditure of a dollar for anti-tuberculosis work than in any other.

MEDICAL INSPECTION OF SCHOOLS IN NORTH CAROLINA*

By Geo. M. Cooper, M.D.,
Raleigh, N. C.

In Robert Louis Stevenson's strange story of "Dr. Jeckyll and Mr. Hyde," one of the principal characters, Mr. Utterson, the lawyer, in describing his previous life, states that "I let my brother go to the devil in his own way." In other words, Cain's creed, "May the devil take my brother, and everybody else, so I am all right," has for thousands of years been the code of the world. But times are changing. Not only is the conscience of the world becoming more sensitive to duty; but the common sense of the world is beginning to realize that there is something in the law of averages. The community realizes now as never before that for every citizen, great and small, whose efficiency falls below par, eventually the community pays the difference.

As a preface to a brief description of medical inspection of schools as now being undertaken in North Carolina, I can do no better than quote Hon. J. Y. Joyner, State Superintendent of Public Instruction. Says Dr. Joyner:

"School problems, order, discipline, study, are vitally dependent upon physical health and physical development. In my opinion no more important nor more far-reaching piece of legislation was enacted by the North Carolina General Assembly of 1917 than this act providing for the physical examination of school children, looking to the conservation and preservation of the health and the strength of the bodies of the children that the intellectual and moral development may be made fundamentally effective through the use of a machine that is as perfect as possible, that works in obedience to the command of mind and soul without friction and with power, strength and longevity. What a waste of money and time and effort and sacrifice to educate the mind and develop the character in a body that dies and ends the service of both, sometimes even before their education is complete, and oftentimes before the length of time that it should naturally serve is finished!

"It is an economic proposition. It is a moral proposition. It is a statesmanship proposition. It is an educational proposition. To me the tragedy of this earth is a diseased child. The natural inheritance of a child is joy and strength and growth and freedom. He is robbed of all these by disease. To me the most tragic indictment of civilization is a diseased child,—civilization that stands still and lets a little child, through ignorance of his parent or his teacher or for any other cause, be robbed of this divine inheritance of the joy and happiness of childhood, of the strength and growth of childhood. Medical inspection is intended to help prevent that tragedy, to help remove that terrible indictment against our Christian civilization. The physician and the teacher are necessarily the main agencies in this work.

HISTORY OF MEDICAL INSPECTION

Before the outbreak of the War, in 1914, every important nation in Europe had an efficient system of medical inspection. The English Parliament, in 1907, enacted a law making the medical inspec-

*Read in Section on Public Health, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

tion of school children compulsory, and it declared that the object is "the physical and mental improvement of the children who are weakly or ailing" and "in the broadest sense to conserve the health of all children." England enacted this law because of facts brought home to them by the Boer War, proving that there had been a degeneration of Englishmen. They naturally began at the source, the correction of defects in children of school age.

Japan has had a complete system of medical inspection for thirty years. They are a warlike people, and they know that the safety of their Nation depends upon the physical prowess of its men. In the United States and Canada the work has been done in many states and provinces in a more or less satisfactory manner. It has alternated between the departments of health and education. In some cities control is vested in the boards of education alone, in some the board of health alone. The only method that has been found satisfactory is joint control by both agencies—health and education. So far as I can ascertain, North Carolina is the first state to adopt a plan devised to reach every child enrolled in the schools of the State at least every three years; and to do this through the control of the State Departments of Health and Education working co-operatively.

PURPOSE OF MEDICAL INSPECTION

The purpose is two-fold:

1. To inculcate a knowledge of hygiene and sanitation in the minds of the children at an impressionable age, that is, teaching applied hygiene.

2. To discover the children who have preventable or curable defects; and to have the trouble treated before permanent danger occurs.

This is your problem in a nutshell: find the defective children and have them treated.

IMPORTANCE OF MEDICAL INSPECTION

Twenty per cent. of all the money expended for education in the United States is wasted, according to the United States Public Health Service and the National Educational Association, because of preventable physical defects of the children. That means an annual loss of millions of dollars.

About one-fourth of all the men examined thus far for the National Army under the draft law have been rejected on account of physical defects. Of the rejections more than one-half have been due to the easily preventable conditions if treated not later than the early years of school age. These defects include eye, ear, throat and teeth troubles.

Country boys, according to recent draft data, showed up worse in their physical examinations for Army service than did city boys. Dr. J. A. Nydegger, of the United States Public Health Service, who is authority for the comparison, accounts for this difference through the lack of medical inspection in the country schools.

From the standpoint of military policy alone, the necessity for the careful examination of every school child, with the subsequent treatment of all defectives found, is obvious to any one with common sense. The United States Government is just at this time in the most critical period of its history. If the war has demonstrated anything at all clearly it is the fact that only armies composed of men of physical, mental and moral stamina can face undaunted an enemy under adverse circumstances.

A modern army is no place for physical weaklings. Nor can the hardships in store for our people at home, including women and children, be withstood long if lacking an even chance.

MEDICAL INSPECTION IN NORTH CAROLINA

The only criticism ever voiced against medical inspection as generally practiced is one which has been confined to no single locality, but is common to every section. It is this: the inspector being a busy physician and naturally a high-priced man, the practice has been for him to visit a school and hurry through the examination of a more or less large number of children in as short time as possible. A defective child is card-indexed and his parent sent a filled-in printed form naming the defect and urging the parent to have the child treated. Result: many children have been properly treated, but the great majority of parents have been indifferent from one cause or another. Insufficient records are

secured, and the whole procedure has tended to get into a rut, to become routine. Teachers, parents and pupils tend to lose interest and naturally the greater good sought is not achieved.

The system in North Carolina requires the teacher to get from the child and the parents a complete family and disease history for each child. This data is recorded on blank cards together with a simple physical examination, giving height, weight, chest expansion, condition of teeth, vision, hearing; whether in the teacher's opinion a mouth breather, etc. Also if the teacher suspects hookworm, tuberculosis or any other condition, after a talk with the mother, the teacher may record on blank. I may say here that this blank is designated for use on four consecutive years, so that it may be sent back each year and the condition of the child checked up. The subject matter on this blank was selected after a study of methods followed in many of the states and cities of this country and also in Canada. Dr. Taliaferro Clark, of the United States Public Health Service, rendered valuable assistance in its preparation.

As soon as the teacher secures and records the data for each child, the card is sent direct to the medical inspector,—one physician in each county appointed by the Board of Education subject to terms specified by the State Board of Health and the State Superintendent of Public Instruction. It is apparent that the teacher is not expected to undertake a diagnosis, but from the data secured and recorded and from the teacher's opinion, the medical inspector will have little trouble, after a careful scrutiny of the cards, in locating children whose physical or mental condition varies from the normal.

The inspector then, instead of visiting the school, notifies the parent or guardian of all suspected defective children, to bring them to the inspector's office, or some other convenient point designated, at an appointed day and hour. A careful, comprehensive examination in the presence of the parent is then made and the parent advised of the treatment necessary for the child and shown the reason why.

For the purpose of aiding in the treatment of all children whose parents are financially unable to procure the service, the State Board of Health has a fund of $10,000 per year available where matched dollar for dollar by the counties, thus constituting a fund of $20,000 per year for this purpose.

Blanks have already been placed with the teachers for 250,000 children this year.

In the cities and some of the larger counties trained nurses have been employed to visit the schools and assist the teachers in this examination.

If every teacher and every medical inspector does his or her full duty in a sympathetic manner numbers of children will have the benefit of first-class dental and specialists' services who would otherwise never get it.

DISCUSSION

Dr. B. E. Washburn, Raleigh, N. C.—I think we will all agree that the most important feature of the North Carolina school inspection law is that some arrangement is made whereby children may be treated. We have had inspection for a number of years, but the trouble has been that only a small percentage of the defective children have been treated, for the reason that the parents have not had a demonstration of the value of treatment. Since we now have a fund whereby we can administer treatment and show the people the value of having these children treated, I think it will mean a great improvement over the old system.

It may be interesting to know some of the ways in which the counties are arranging to expend this money. Some of our counties are dividing the defective school children into three classes: those whose parents are able to provide treatment, those whose parents are not, and the middle class, whose parents are able to pay part. With these funds the State Board of Education and the State Board of Health are arranging to treat the two classes that need it. Children will be selected from all parts of the county, who will very readily show the results of treatment, and since we shall have only limited funds for each county, we shall try to pick cases that will show the best results. By treating a number of these cases each year we shall show by demonstration the value of the treatment. We hope that in a few years the parents themselves will take it up to a large extent and we shall have no further trouble in having the children treated. That, I think, is the most important feature of the law, for it enables us to demonstrate to the parents the value of having the children's defects remedied.

Mr. James P. Faulkner, Atlanta, Ga.—I am very much interested in this paper. It brings to my mind a recent experience which I had in securing the appointment of a public health nurse. We have an all-time public health officer in Georgia. Soon after his appointment I went through-

out the County with him and visited the schools and saw his inspection of the children. A year after his first visit he inspected the schools a second time and checked up his findings with the previous record. Shortly after the second inspection I received a telegram asking me to join him in a plea to his County Board for a follow-up nurse. I was there at the time appointed, and as a basis for my plea for the nurse I went to his files and took the first records that I came to—twenty cards of children who had been inspected twice. I took these cards before the County Board and showed that the suggestions of the Health Officer as to medical attention had been followed in only two cases, and in two others Nature had corrected the defects. Upon that record of failure upon the part of their health machinery I made my plea for a follow-up nurse. I told them that they had a good team, but it was a one-horse team, while they needed a two-horse team. In the midst of my plea the Superintendent of Schools, who was a member of the Board, said to me: "I can not hear you any longer; I must go to feed my chickens." I came near losing my temper just there. I wanted to say, "We are pleading for the children, while you are thinking of chickens." I mastered my anger, however, reinforced my argument and got the promise of two thousand dollars for a nurse and a car to carry her over the county. They said they would get a runabout, but I insisted that they get a touring car so she could take the children and the mother with the children and carry them to town for medical attention if necessary. I am glad to say that they have the nurse now and that she is doing the work and meeting with universal favor.

Dr. John J. McKenna, Philadelphia, Pa.—I was more than pleased that the essayist gave Pennsylvania credit for its advancement in this matter of looking after the welfare of school children. I can express the views of one who has seen the method carried to almost the point of completion in my own city, and to the defects of the system. It has been more or less elementary for some time, but they are gradually getting it to the point of perfection and each year adds to the experience. We are better able now to carry the thing on in a more intelligent manner. I think the first steps were taken in regard to the vision of school children, which was certainly a very important matter. Thousands of children had their vision corrected, and of the benefits derived from this it is unnecessary to speak. We have seen it demonstrated time and again. The number of cases of adenoids and diseased tonsils have really been tremendous. The children have been examined carefully by the school physicians, who have taken the proper interest in the work—and, by the way, that is a very important matter in taking up this question, the taking of interest; but we insisted on having men appointed to these positions who would conscientiously carry out the work properly. Political influence enters into these appointments frequently, and men are appointed who are not equipped for the work and the children suffer thereby. It is a matter of education, and it takes time to educate the parents to the necessity for these measures; but once they become really acquainted with the scope of the work, they fall in with it and their assistance becomes invaluable.

The Health Board in Philadelphia has taken up particularly the question of the chest condition of the children. They are endeavoring to get open-air schools for the prevention of active tuberculosis. They select children who give evidence of tuberculous conditions, possibly incipient tuberculosis of the lungs, and are establishing these open-air schools and already showing the necessity for these places, for they are accomplishing splendid results.

Dr. Cooper (closing).—I would like to emphasize two points in our system. Of course, we have many features that are far from perfect, but we hope to eliminate the more objectionable as time goes on. The first thing is the freedom from political influence in the appointment of these men. The County Board of Education is required to appoint the School Inspector subject to approval by the State Board of Health and the State Department of Education, and in that way I think we have a system about as far removed from political influence as it possibly could be. In the next place, the way selected to do the "follow-up" work when nurses are employed as in some counties—we allow women's clubs and civic organizations composed of men and women to designate these nurses. Then the other feature is the personal contact between the doctor in his office and the parent out in the county. When he brings the child in for examination the medical inspectors in this way have an opportunity to see improvements that can be made and present them at a time when something can be done, because the parent is made to understand the reason for it.

MEDICAL SUPERVISION OF EMPLOYEES IN LARGE INDUSTRIES*

By J. A. Gentry, M.D.,
Medical Director, Southern Bell Telephone and Telegraph Company,
Atlanta, Ga.

In the past our laboratories have devoted nearly all of their time to perfecting and standardizing the ordinary materials used in production, and it is only in recent years that much thought has been devoted to the bigger problem, the human material. It is now realized that the success of any industry depends in large measure upon the loyalty and efficiency of its employees, and for this reason a se-

*Read in Section on Public Health, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

ries of benefits have been put in operation which might be included under the general term "Welfare Work." It matters not how this work is divided or what the various departments handling it are called, its various features are so intimately connected that they can not be entirely separated, nor can any one of them be omitted.

The time allowed to this paper will not permit me to go into much detail in regard to the work of the other departments engaged in handling the human material, and I shall mention them only very briefly and pass on to the department with which we are most concerned.

First are the employment supervisors, who are concerned with the mental and manual qualifications of the applicant in regard to the work he is expected to perform. The employment supervisors should be familiar with working conditions and standards, and it is the duty of this department to provide instructors whose business it shall be to teach the new employee how to do this work safely and efficiently.

There is a Committee on Safety, whose duty it is to see that machinery, apparatus, buildings and other conditions are made safe; that accidents are analyzed in order that preventative measures and safeguards may be considered and installed and that the employees are educated and drilled along these lines in order that their cooperation may be secured.

Some organizations have a plan whereby they loan money in small sums to deserving employees in times of stress brought on by unforeseen circumstances who are unable to obtain loans through the ordinary commercial channels. Some organizations also have a plan to award employees for useful suggestions to be applied by the company in its operation. This supplies a constant stream of useful ideas along all lines of endeavor, the value of which no one can estimate.

In many ways working conditions are made pleasant by due consideration of the question of ventilation, light, lockers, laboratories; and lunch rooms, rest rooms, etc., have been provided.

Through the various employees' societies the opportunity is afforded to get together and become better acquainted with one another. Athletic activities are encouraged, so that employees will spend as much of their recreation in the open air as possible. Educational courses are conducted along domestic, literary and commercial lines, offering occasion for self-improvement and advancement.

Employees' benefit funds have been established to provide insurance against death, disability and old age. This policy has been inaugurated by industries not only in appreciation of the services rendered by their employees, but as a measure for further increasing the efficiency of their forces.

In any plan for securing a healthy and desirable class of employees and for maintaining the health and happiness of employees, it is very necessary that there be some form of medical supervision working in cooperation with the other agencies enumerated. Medical supervision begins with the examination of the applicant in order to determine if the individual is physically suited for the work he is expected to do, and to guard the present employees from injury by reason of admitting into the force the physically unsuited. A medical examination also brings to light many impaired conditions of which the applicant is ofttimes unaware and gives him a chance to secure the proper medical treatment. It is evident that any system that succeeds in bringing together the public and scientific medicine, provided the co-operation of the one examined can be secured in seeking competent medical advice, will result in the improvement of health and efficiency and in the prolongation of life.

With arrangements made to secure a reasonable standard of physical fitness in the applicant, it is still necessary, if the personnel of the force is to be efficient and happy, to provide further measures for maintaining the health of employees. In a large industry where employees are grouped together in one place, the problem of medical supervision is simplified to some extent. With its hospital and dispensary, its staff of doctors and nurses, the injured can be cared for promptly, and medical treatment supervised very closely. However, when the employees are dis-

tributed in small groups over a large territory, the problem is much more difficult. The medical director of a company having supervision over these cases is located at headquarters and has to depend in a large measure upon the reports furnished him by the local physicians, and this is sometimes at a point at great distance. In this case it is not always so easy to fix the actual period of disability, nor to determine if the employee is actually disabled and is having the proper medical attention, nor to see that worthy employees are not deprived of benefits to which they are justly entitled. As a majority of these cases are treated by the family physician, it is necessary in a large measure to depend upon the co-operation of the doctor. A few doctors, under present conditions, seem to act on the theory that their interests and those of the patient are opposed to those of the company, and where conditions of this kind exist it is difficult to accomplish the greatest good.

The importance of the supervision of the health of the employees centers chiefly in the early detection of disease, and in prompt and skillful treatment. This gives the patient a better and quicker chance for recovery, and it is also a benefit to the employer, in that the convalescence is shorter and the patient is able to return to his work at an earlier period.

When employees realize the importance of these factors, and the harm that results from neglect of what might seem to them trivial conditions and of depending too long upon home remedies before calling in a doctor, the work of medical supervision will be made very much easier. An employer can only be commended for strongly urging a condition of treatment which secures for the patient prompt and proper care.

In order that medical supervision may be effective, it is necessary that arrangements be made with physicians of high standing to make thorough examination of all employees referred to them by the company, the understanding to be that these examinations are for the purpose of diagnosis only.

Much good can be accomplished through the supervising forces, who can be readily instructed as to the observation of the employees under their care for such symptoms as loss of weight, continued cough, impaired health, etc. When an employee appears in any way to be in failing health, he can be instructed to go to one of the designated physicians for a thorough physical examination. If the examination develops any condition requiring treatment, the physician who made the examination should refer the case, with his diagnosis, to the employee's physician for treatment at the employee's expense. It is clear that the examining physician must be in sympathy with the company's desire to improve the physical condition of its employees without taking the matter of treatment out of the hands of the employee's family physician. In this way a great deal of good will result through disclosure of many impairments in their incipiency, when many of them can be treated with greater success than later, and without so much loss of time on the part of the employee.

There are many cases of neurasthenia, anemia and other indefinite troubles which are frequently symptoms of organic disease, or the result of faulty living conditions or habits. These conditions do not occur immediately, and it is proper and highly desirable that the physician representing the company satisfy himself by examination of the employee or by communicating with the employee's physician that the diagnosis given is a complete statement of the case; that the disability is such that rest and relief from work are desirable; that a definite plan to secure the needed rest and treatment will be followed. This measure is desirable to insure a thorough diagnosis so as to discover diseases in their early and curable stages.

Another very important measure in the early detection of disease and arrangements for prompt and proper treatment is the visitation of employees reported absent on account of sickness. It is quite evident that the person assigned to this work should possess certain qualifications, one of which is the ability to judge of the physical condition and needs of the employee, such as is presumably gained through training as a nurse. Many classes of people do not send for a physician when

ill unless they regard the symptoms as particularly urgent or dangerous, but depend largely on household remedies for treatment. Many a case of appendicitis has been treated as a simple stomach trouble and allowed to go on to suppuration and death, and many a case of diphtheria has progressed to an advanced stage, when prompt treatment would have saved the life. The purpose of this visit is to show the interest of the superior in the employee, to make certain that the employee has secured medical attention, and that conditions are such that proper care is possible. The usefulness of a visit of this kind is especially evident in the case of employees who are living in boarding houses. It is in this work that a trained nurse can be of great service.

At present there is a very active crusade throughout the world against tuberculosis, and the lines of public protection are being more closely drawn by health authorities in regard to the detection of this disease. It is only by taking advantage of every opportunity to examine physically every individual that this disease can be detected in its early stages.

Suppose now by the various methods of medical supervision we are able to discover tuberculosis in its early stages, and can supervise the arrested cases after they have returned to work. The great problem, and the one with which the public should be concerned, is the provision for the proper care and treatment of these cases until they are arrested or otherwise terminated. We have found that the mere payment of benefits is not sufficient, as, without guidance, such payment is not always used in a way to bring permanent benefit to the employee. The experience in a great many cases is that valuable time is lost and the benefit paid nearly exhausted before the employee can make or has made a definite plan as to the proper course to pursue in his endeavor to recover his health.

Recently I have visited the various institutions in the territory occupied by our employees, not only to ascertain the facilities in each locality for the care of tuberculosis, but in order that I might know personally the management of these institutions and be in better position to advise our employees as to the best treatment they can secure under the circumstances. The fact is that there are very few localities where the present facilities are sufficient, and the general condition is that the existing institutions where treatment is offered at moderate cost are overcrowded and have long waiting lists.

Practical sanatoriums fully appreciate that in the future the public health must be maintained chiefly by the prevention of disease rather than by its treatment, and it is principally through the co-operation of the public, more particularly those who have under their direction large numbers of employees, that this important end is to be accomplished. The health officers in the various states would do well to avail themselves of the machinery of all large organizations, particularly those with a chief medical advisor, in campaigns conducted for the improvement of health. I am sure they will find the majority of them willing and anxious to co-operate in every way, either in the distribution of literature to its employees and their families, or by urging them to enter into "clean-up" campaigns.

DISCUSSION

Dr. Martin E. Taber, Dallas, Tex.—We have been working for a number of years, and I want to say to you that the American Bell Telephone Company is doing nothing more nor less through its medical work than that which you have been driving at. We have been wishing for a number of years that we could get the ear of some company which would apply this principle, and now we have the ear of this Company. They are listening to us. They have set us a definite, successful plan for caring for their employees, and they have done that by the sound sense we have presented to them, and they are trying to apply it. We have the same thing in the Telephone Company that we have in trying to administer lines of public health matters. No one knows better than Dr. Dowling that we have difficulty in getting employees to take advice in reference to appendicitis, ovarian abscesses and many other things, but through a campaign of education it is the purpose of the individual medical advisor, who becomes the mouthpiece of the organization, to speak to the employees respecting that which is best in the profession. It is a fine opportunity for you to do noble work, and that is to apply the results of our evolution to safeguarding the public health. Good, honest medical service is what they are trying to get, and I think the Company is offering one of the best opportunities. The Telephone Company in my section has been at the disposal of every state and county health official.

Speaking of tuberculosis, I have had considerable experience in observing the early inception of tuberculosis—and what has been accomplished? You can give them money, and they take our money and go to work down in basements, in sweat shops, while we were giving them money to get well. What we want is to know that when we give them money they will go to the right place and get a square deal in that place. We want them to get honest service, that for which Southern and Northern physicians everywhere stand; that is, the best that scientific medicine can give a sick human and give it now, not when it is too late.

Dr. Charles L. Minor, Asheville, N. C.—In view of the many times I have "cussed" "central" since I first had my telephone installed, I wish to pay tribute to the work that Dr. Gentry has done. I think very few of our big corporations have as helpful a policy toward their employees as this Company has. I have a chance to know something of it, and I can forgive the sins of your "centrals" in view of the very great virtues of your headquarters.

Dr. Gentry (closing).—I do not think there is anything I care to add to the discussion. However, I want to thank you for this opportunity for meeting with this Section of the Southern Medical Association. It is a great pleasure to know the men who are doing so much good work for the public health in the South. I am glad to meet again Dr. Brayer, Dr. Minor and Dr. Dunn and the other noted physicians who are devoting their best efforts to the study of tuberculosis, as they are doing so much to help us solve the problem of caring for these cases.

AUTHORS' ABSTRACTS

Tropical Diseases and Public Health

The Soil Pollution Problem. Victor G. Heiser, New York, N. Y. Medical Insurance and Health Conservation, Vol. XXVI, No. 2, August, 1917, p. 442.

Soil pollution, due to the deposit of body discharges on the ground or other exposed places, is an important link in transmitting pathogenic organisms from one person to another. Typhoid fever, dysentery, the diarrheas, cholera nostras, and intestinal parasitism, including hookworm infection, are directly due to this cause. Our great enemy, typhoid fever, is mainly conveyed in this way. Hookworm infection, counting more than 100,000,000 victims throughout the world, is largely due to soil pollution. In the Southern states typhoid rates are particularly high and in many areas one-third of the population has hookworm disease. Thus, soil pollution presents a sanitary problem of first importance.

Methods of sewage disposal differ widely in various parts of the world. In Europe and America the collection of night soil is responsible for large public expenditure; in the Orient it is the source of huge income. Shanghai derives from it an annual revenue of $72,000. Having commercial value, every particle of the excrement is carefully collected and transferred with the minimum of leakage to the selling point in the agricultural districts. On the farms, however, the night soil is used in a fresh state and causes widespread infection.

An economic solution of the soil pollution problem would be to combine the better features of the Oriental and Occidental systems: make the process of disposal a paying business proposition, but render the excrement innocuous so that it could not transmit disease. Treatment with a cheap chemical that would destroy pathogenic organisms without preventing subsequent inoculation and growth of bacteria necessary to conserve fertilizing value, might accomplish this result.

Some Ancient Health Laws of the Jews. Joseph H. Marcus, Atlantic City, N. J. Medical Record, Vol. 92, No. 12, September 22, 1917, p. 503.

Preservation of physical well-being was a religious command in Judaism. "To live through them but not die through them" was the principle applied to the Biblical laws, and the neglect of one's health was sinful. There was no distinct health department; but circumcision and communal well-being were delegated to a physician. The rabbis enforced dietary laws, such as eating slowly and not overeating, early breakfasts and no conversation when eating. They recommended fat meats, wheat bread, old wine, salt, and soups. Regarding domestic sanitation, all excreta from man and beast were covered with earth and deposited in a special place. Cemeteries, tanneries and flour mills were situated fifty cubits from the city limits, and all offal was burnt outside the city. When leprosy dominated quarantine was imposed. Laws were constructed, referable to things clean and unclean, divided into two classes: (1) those governing cases of impurity created in the body of a person, e. g., leprosy, menstruation; and (2) those dealing with contact of unclean objects, e. g., dead bodies. A system of baths and ablutions were enforced to prevent the propogation of infections, and ritual laws were secondary when health was endangered. Forbidden as food are: meat of a poisoned animal, meat and fish together, water that was uncovered overnight. Perspiration was dangerous, and coins were kept out of the mouth. The hands were washed before and after relieving Nature, and prior to eating. Heavy meals before retiring were warned against, and people were told to lie first on the right side and then on the left. Regulations pertaining to sexual intercourse were advised. Laws were also framed to prevent injury to one's self, also to others, for life was considered as belonging to God and not to man. Defiance of the law was punishable with stripes.

SURGERY

WAR, RAILWAY, INDUSTRIAL, GYNECOLOGICAL, OBSTETRICAL AND UROLOGICAL.

RECENT PROGRESS IN THE TREATMENT OF CANCER OF THE PROSTATE, SEMINAL VESICLES AND BLADDER*

By Hugh Hampton Young, M.D.,
Clinical Professor of Urology, Johns Hopkins University,°
Baltimore, Md.

The subject which I have been asked to bring before you is rather comprehensive, but as these conditions often overlap, there is much to be gained by treating them together. Cancer of the prostate has until recently been considered an infrequent disease, but statistics now show that about one in five of the cases of prostatic obstruction in men past fifty years of age is cancerous, and these cases therefore furnish a very important surgical problem, especially as the possibility of a cure by radical excision is entirely possible if an early diagnosis is made.

The pathology of cancer of the prostate is very interesting on account of certain well-defined characteristics, viz., cancer begins almost always as a hard area in the posterior subcapsular portion of the prostate, quite separate and distinct from the lateral lobes, which are the seat of a simultaneous or pre-existing adenomatous hypertrophy in over 50 % of the cases. The cancer remains well encapsulated for a long period, rarely breaking through the posterior capsule until late and generally progressing upward around the ejaculatory ducts and seminal vesicles in the space between the bladder and the fascia of Denonvilliers. The rectum is generally not involved, and the bladder rarely shows an intravesical tumor though the wall may be infiltrated and the trigone markedly elevated. The mucous membrane is only rarely ulcerated. The obstruction present is very frequently due to hypertrophied lateral and median lobes, which are generally well-encapsulated and free from cancerous invasion. The most important consideration is, therefore, early diagnosis. This is unfortunately difficult owing to the fact that most often patients come too late. The early symptoms are so similar to those of hypertrophy and so insidious that they often do not present themselves until too late.

As a matter of fact, the symptoms are often so slight that it would be well, if it were possible, to have examinations made at regular intervals. If an area of marked induration or a very hard nodule is discovered, whether the prostate is enlarged or not, carcinoma should be suspected. In four of my cases the area of cancer was less than 1 cm. in size and lay just beneath the posterior capsule so that a radical cure was easily accomplished.

We have not space here to go into details of pathology, symptomatology or diagnosis. Suffice it to say that if physicians could be induced to make frequent rectal examinations, as a routine procedure in all physical examinations, and be suspicious of any very hard area in the prostate, many early cases of cancer would be discovered.

Now, as to the progress which has been made in the treatment of cancer of the prostate, I can say that much has been accomplished. Ten years ago I presented a radical operation which consisted in the excision of the entire prostate (with its capsule and urethra), a cuff of the adjacent bladder including two-thirds of the trigone, and both seminal vesicles—all removed in one piece. The operation was completed by anastomosing the remainder of the bladder with the membranous urethra. The results obtained by this procedure have been excellent and lasting cures in over 70 % of the cases followed were obtained, but until recently every patient suffered with incontinence. I have now modified the operation in a very sim-

*Address before Kings County Medical Society, Jan. 16, 1917.
°From the James Buchanan Brady Urological Institute.

ple way, which has effectually done away with incontinence, and given functional results fully as perfect as after the usual conservative perineal prostatectomy. This modification consists in hugging the capsule of the prostate, laterally and anteriorly, thus elevating the transverse fascia and lifting up with it the nerves and blood vessels supplying the region of the external sphincter and triangular ligament. The perfected operation, then, is shown in the accompanying drawings.

THE RADICAL OPERATION

The patient is placed in the exaggerated lithotomy position and an inverted "V" perineal incision made, as in the operation for simple hypertrophy of the prostate, the successive steps of which are followed until the tractor has been inserted through a urethrotomy wound of the membranous urethra, and the posterior surface of the prostate has been exposed, largely by blunt dissection. If there is, then, any doubt in the mind of the operator as to the malignant nature of the disease, an incision is made through the capsule and a section removed for examination, frozen sections being made if necessary to establish the diagnosis, when either the simple prostatectomy for hypertrophy or the radical operation for cancer can be performed as the case requires. In the case of cancer the next step after exposing the posterior surface of the prostate is to free the lateral adhesions of the prostate and also the seminal vesicles as much as possible by blunt dissection. Then the membranous urethra is divided in front of the tractor. The handle of the tractor is then depressed markedly, but the puboprostatic ligaments are not divided with scissors close up to the anterior surface of the prostate, as formerly. By going between the lateral periprostatic fascia and the prostate it is possible to push away the anterior plexus of veins by blunt dissection and avoid hemorrhage. This also preserves the nerves and vessels supplying the triangular ligament and thus avoids incontinence. Hemorrhage should be controlled as much as possible by ligatures and then by gauze packs, which should be held tightly against the posterior surface of the pubes and the triangular ligament by means of a retractor. The seminal vesicles should be freed further.

The prostate is drawn outward as far as possible, thus exposing the anterior surface of the bladder, which should be punctured just above the prostato-vesical juncture. This wound is now enlarged on each side by scissors, the line of division being close to the prostato-vesical juncture, until the trigone is exposed. With the scalpel a curved incision is made across the trigone, thus leaving the upper angles of the trigone intact, and being careful to do no injury to the ureters. By blunt dissection the seminal vesicles are then exposed and the vasa deferentia picked up with a blunt hook and divided with scissors as high up as possible. (In doing this it should be remembered that the vasa deferentia pass around the lower end of the ureters.) The deeper attachments of the seminal vesicles are then freed and the mass, consisting of the prostate, urethra, cuff of the bladder, seminal vesicles, and about 5 cm. of the vasa deferentia, is removed in one piece. Hemorrhage is again encountered in the last step above described, owing to the fact that the prostatic plexus of veins, which passes up along each side of the prostate, is closely attached to the lateral border of the seminal vesicle, but this can easily be controlled by ligatures or long clamps. The bleeding which comes from the subsequent sutures, which are placed so as to anastomose the bladder with the membranous urethra and completely close the vesical wound. This is easily accomplished. As seen here the anterior wall of the bladder is drawn down and fastened to the stump of the membranous urethra by means of interrupted catgut sutures. After forming the anastomosis with the urethra a considerable vesical wound is left posteriorly, but it is easily closed by the transverse sutures. I have found it best to use an occasional suture of silkworm gut in order to take care of the tension which is present. The ends of these are left long enough to emerge from the wound so that they can be removed two or three weeks later. A retained rubber catheter, which should be inserted before the vesicourethral anastomosis is made, is fastened to the glans penis with adhesive plaster. After placing light gauze packing in the depths of the wound the levator and muscles are approximated with two or three interrupted

sutures of catgut so as to protect the rectum against pressure from gauze and the external wound is almost completely closed with interrupted sutures of catgut. In some instances I found it difficult to place ligatures around hemostatic clamps which were deeply placed, and have therefore not removed the clamps, but allowed them to emerge with the gauze packing from the anterior angle of the wound. (They were removed twenty-four hours later.) If careful attention has been given to the prevention of hemorrhage and an infusion has been begun early in the operation there should be little or no shock.

THE TREATMENT DURING CONVALESCENCE

This is very similar to that employed after perineal prostatectomy, viz., water in abundance, urotropin, the patient allowed to sit up as soon as possible, daily irrigations of the bladder with small amounts of boracic acid solution, not more than 30 c. c. being injected at a time. The gauze packs are removed in two or three days and the urethral catheter in a week, but the silkworm gut sutures are allowed to loosen and no attempt is made to extract them forcibly for about eighteen days. No difficulty is experienced in getting a good approximation and wound healing, and little or no stricture formation has been encountered at the point of vesico-urethral anastomosis. Sounding is not necessary. None of my patients has had a persistent fistula.

RESULTS

I have now carried out the radical operation in twelve cases (one not cancer) with one death due to operation. Two patients died of septicemia several weeks after operation (one from ascending infection of kidneys, the other a peri-urethral infection; both due to avoidable accidents which should not be charged to the operation *per se*.)

Of the eight remaining cancer cases there has been a recurrence in only two cases (25 %). One patient died of angina pectoris six and one-half years after operation and a complete, careful autopsy revealed no recurrence. The other five cases who are still alive are all well at periods varying from six and one-half to one year after operation (all but one case over two and three-quarter years). I have examined three of these patients personally and find no evidence of recurrence. There has not been a single case of stricture at the site of the anastomosis of bladder and urethra. No dilatations and no instrumentations have been necessary.

All of the early patients had incontinence when on their feet, but in the last two cases, in which the perfected technique (preserving the blood and nerve supply of the region of the triangular ligament has been employed) the act of urination is practically normal in every respect. It is interesting to note therefore that the posterior urethra and trigone are not the only source of the stimuli for micturition, and that the urinary act may be normal without them.

The results thus shown—70 % cures among patients followed three years—compare favorably with the results of radical operation for cancer in other parts of the body. This remarkably good result is attainable, I believe, because the prostate is a well-encapsulated organ, walled in posteriorly by the two layers of Denonvilliers' fascia with no lymphatics traversing them, so that the line of invasion is naturally upward between Denonvilliers' fascia and bladder, and well confined.

I observed one of these cases for three years. At first there was simply a small round nodule 1 cm. in diameter in the postero-external lateral part of the left lobe. In two years it was twice as large, but still well within the capsule of the prostate. One year later it was about 3 cm. in diameter, irregular, but still encapsulated and the specimen removed by radical operation showed a wide margin of healthy tissue above the cancer. This case shows the remarkably slow growth in some instances.

In addition to the six cures obtained by radical operation, mentioned above, four patients, with less extensive carcinoma, are apparently cured after a less radical operation—subtotal excision of the prostate on one side with the lower portion of the adjacent seminal vesicle and the floor of the urethra and ejaculatory ducts, adenomatous hypertrophy of the remaining portions of the prostate being enucleated. One of these patients is well after five years. The others are more recent. In two cases, in addition to the apparently

radical removal of the cancerous area, 100 mg. of radium was inserted (in a rubber catheter) and allowed to remain six hours in the wound, in the region from which the cancer was excised. One of these is well now two years.

I can not, however, recommend anything but the radical operation, which offers such excellent chances of cure even in cases where the lower portion of the seminal vesicle is involved.

Three cases in which a small nodule of cancer was accidentally removed in performing conservative perineal prostatectomy should also be mentioned among the cases here. The patients were operated upon twelve, eight and two years ago, respectively. In one of these cases a small narrow flat nodule about 5 x 10 mm. lay immediately beneath the capsule in the median line, was not suspected as malignant, but merely excised to get a specimen out of curiosity. I was amazed to find it a localized carcinoma. These accidental cases go to show, however, the great value of the perineal exposure of the prostate, which makes it possible to recognize and excise these early carcinomatous areas, which almost invariably lie just beneath the posterior capsule and therefore are never removed by suprapubic prostatectomy.

The prevalence of cancer undoubtedly furnishes a very strong argument for the perineal operation, which alone furnishes the means of thorough careful visual inspection, palpation of the prostate and excision of tissues for frozen sections if necessary for diagnosis. The radical operation can only be performed through the perineum. Recapitulating, my statistics show nine apparent cures in cases of cancer of the prostate, all followed three years, and most of them from five to twelve years. These results speak for a much wider employment of the radical operation and especially for early diagnosis.

CONSERVATIVE PERINEAL PROSTATECTOMY

This may be very successfully employed to remove the obstruction. The operation is conservative and frankly partial, the object being to remove thoroughly the carcinomatous tissue which causes the obstruction, preserving the mucous membrane as carefully as possible. The results have nevertheless been surprisingly good, an analysis recently made showing forty-nine excellent lasting functional results in seventy-one cases. Most of the other twenty-two cases were greatly benefited for prolonged periods. An amazing result has been to find that the obstruction did not recur, and that ulcer of the bladder or urethra very seldom arose after this partial prostatectomy. Many of these patients have lived from three to five years after the operation—often in comparative comfort as far as the bladder was concerned.

The use of large amounts of radium externally or of X-rays may be very helpful in some cases. The massive radium treatments, as carried out by Burnam, are applied, screened by lead and by two or three inches of gauze and rubber, over the perineum, the coccyx or suprapublic region. Two grams may be thus used for twelve to eighteen hours with impunity, but we have occasionally gotten slight burns. In a few cases this massive external treatment has obtained good results, in others not, and our investigation shows that the two should often be combined—large external and small internal applications being frequently made.

CANCER OF THE SEMINAL VESICLES

As mentioned above, the usual progress of cancer is upward, beneath the anterior layer of Denonvilliers' fascia into the region beneath the trigone and around the vasa deferentia and seminal vesicles. The invasion is often slow and circumscribed so that the radical operation, already described, may be successfully carried out even if the cancer has reached one cm. or more into this region, as shown by two of my cases. If only the lower portion of the seminal vesicles is involved the radical operation is still indicated, but where the larger part of one or both vesicles is involved other measures have to be considered. It is here that radium has recently played such an important part in our clinic.

At the International Medical Congress in London, 1913, Pasteau mentioned a few cases of cancer in which he had used radium in the posterior urethra and bladder. His method consisted of a small glass tube of radium enclosed in a thin silver tube which was introduced into a Coude gum

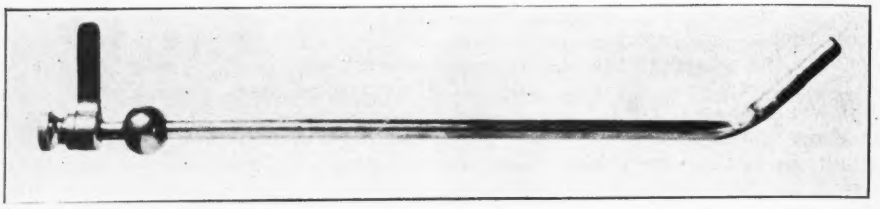


Fig. 1

catheter and thus carried to the desired position in the bladder or urethra.

Having procured some radium, I commenced first on an inoperable case of cancer of the bladder. It was at once evident that the simple catheter method of introducing radium employed by Pasteau was utterly inadequate, and accordingly I set to work to design a radium-carrying instrument which could be used with the small straight cystoscope which I have used in my cystoscopic rongeur work for several years.

The instrument shown in Fig. 1 was made in the machine shop of the Brady Institute. As shown in illustration the radium (103 mg.) is carried in a capsule which in turn slides into the open tubular end of the instrument, where it fits closely enough to be held by friction. For the bladder a tubular instrument is used which is introduced with an obturator, which is then withdrawn, the bladder washed clean and the cystoscope introduced. Little difficulty is experienced in placing the radium under cystoscopic direction in any desired intravesical position. For the urethra and rectum the cystoscope is not necessary, and I have therefore had a smaller instrument constructed which simply carries the radium in its beak, as shown in Fig. 2. With this instrument the platinum capsule (3 mm. thick) which contains the radium is easily placed in any desired part of the prostatic urethra or vesical neck. The same instrument is most satisfactory for rectal applications. Pasteau did not employ radium treatment per rectum, and as I could find no such previous use in cancer of the prostate, I started very cautiously, but soon found that radium could thus be employed per rectum, an hour at a time, very frequently, *if the location of application is different each time.*

By means of a finger in the rectum, the capsule of radium may be placed at any desired spot against the posterior surface of prostate, seminal vesicles or bladder. The mechanical holder (which clamps upon the ball near the end of the instrument) holds the instrument where desired, as shown in the photograph (Fig. 3). In some cases the patient prefers to lie on his stomach (face downward) instead of on the side (as shown), but as a rule he maintains the position directed without moving for one hour, which is the routine length of time for rectal treatments of 103 mg. The accompanying charts show the various treatments carried out, usually every other day, in certain cases. As seen here, positions about 5 to 10 mm. apart are selected. In some cases they overlap, but as a rule from two to four weeks elapse between the two overlapping treatments. Using 103 milligrams of radium in a platinum capsule, I have found that from twenty to thirty treatments, of an hour each, may be given to the prostate and seminal vesicles, per rectum, without pro-

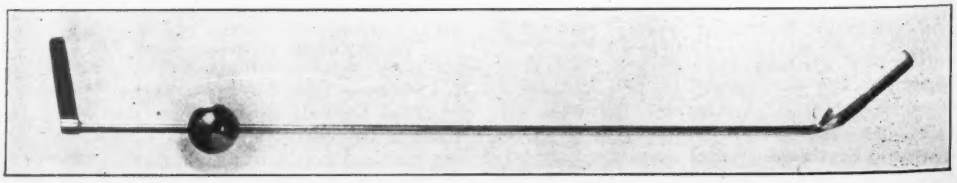


Fig. 2

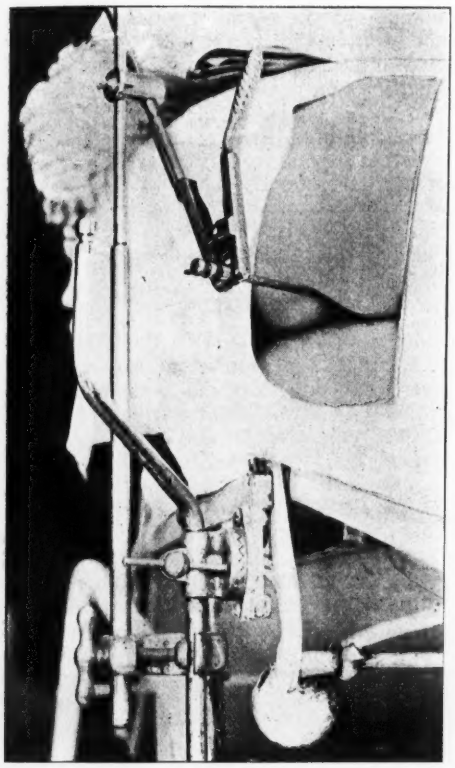


Fig. 3

ducing more than slight irritation in most cases. The urethral tolerance is even greater, the prostatic urethra often standing 1,000 mg. hours. This amounts to a great amount of radiation, because the radium is in close apposition to the cancer when it is in the urethra and also when it is in recutm. As the effect of radium varies inversely as the square of the distance it is seen at once that 100 mg. in either of these positions is equal to many hundred milligrams applied from the outside of the skin (perineal, sacral or suprapubic applications).

The seminal vesicles, too, can be easily reached either through the rectum or bladder (only about 5 mm. of tissue—rectal or bladder wall—intervening in either case). The accompanying charts demonstrate the method of use.

The results obtained in cases, all of which were extensive, were indeed almost unbelievable at first, viz., marked diminution in size and consistency of prostate, so that in many instances the characteristic induration completely disappeared, being replaced by a normal softness, so that if seen then, for the first time, cancer would not have been suspected. In some cases the obstruction to urination slowly diminished or disappeared, and occasionally severe pain present in the prostate entirely disappeared. In some instances the result was quite negative.

DRAWBACKS

Irritation and pain may result from overuse of radium in the urethra, bladder or rectum. All seem to stand two hourly treatments in the same spot, but given a week or more apart, without difficulty. By using our scheme of multiple application, each at a different spot, though close together, twenty to thirty hourly treatments by rectum and a less number by urethra and bladder can be borne with ease. In some cases, however, excoriation or slight radium burn has occurred. It generally evinces itself by irritation and pain, and sometimes by mucus and a little bleeding. If pronounced it may

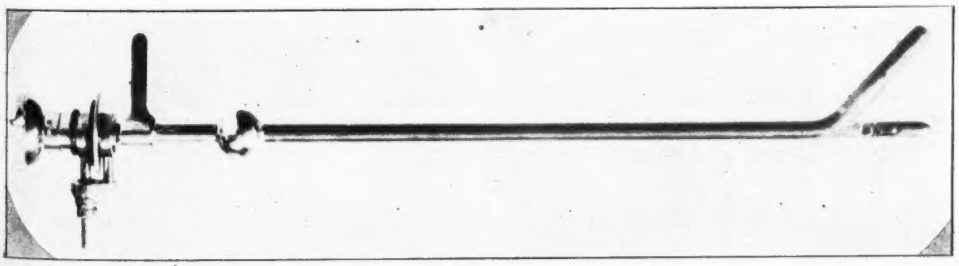


Fig. 4

cause much discomfort, so that great care should be taken not to allow the treatments to overlap.

TISSUE CHANGES PRODUCED BY RADIUM

In three cases operated upon after a long course of radium, examination of the tissue in each instance still show the cancer cells, but there is quite a marked change in the tissue. There is a great preponderance of connective tissue. The epithelial areas are markedly shrunken and the individual epithelial cells are considerably changed in that they are shrunken, irregular, and at times nothing but the nucleus can be recognized. One would, however, have to say from the microscopic section that cancer cells still are present, although of course it can not definitely be stated that these cancer cells might not eventually entirely disappear if sufficient time for their absorption were allowed. In many of the sections there is a peculiar colloidal degeneration of the epithelium to be noted. In two of these cases the prostate, on rectal examination, was only slightly larger than normal at the time of operation, the radium having caused a marked shrinkage in the gland. The consistency of the gland was firm and elastic, not stony hard, nor could the gland be said to have normal consistency, being distinctly firm. At operation the tissue in two cases, on being incised, was found to be as tough as leather, and was freed with considerably more difficulty than the average carcinoma. The gross appearance of the tissue was also changed. On section it looked like very dense compact connective tissue, with very few small epithelial areas visible. The surface might be said to be almost homogeneous.

TUMORS OF THE BLADDER

In 1913 I presented at the meeting of the American Medical Association, Section on Genito-Urinary Diseases, a study of 118 cases of tumors of the bladder. Since then we have had about 60 additional cases and my associate, Dr. Geraghty, has prepared a careful analysis of them. Our opinion is now that benign papillomata of the bladder should be treated by fulguration, and though additional tumors may appear, an ultimate cure by this means is quite feasible. In cancer of

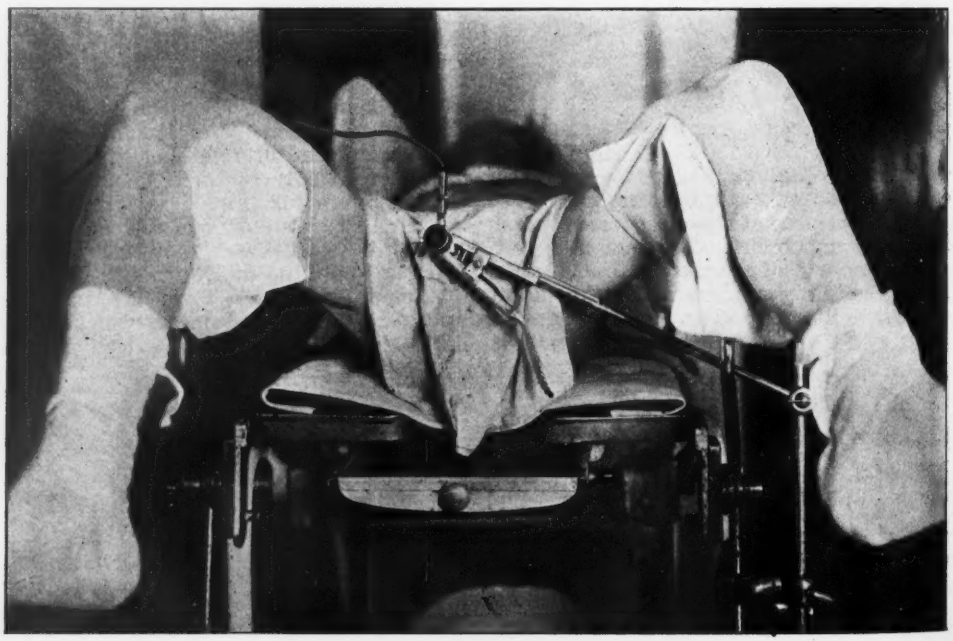


Fig. 5

the bladder, resection, with a wide area of bladder wall, is indicated, but unfortunately this is not successful in tumors of the base, nor near the trigone nor prostatic orifice. Even though the greatest care and a very radical operation was carried out, practically every case showed a recurrence later.

In tumors of the vertex and the upper lateral anterior and posterior walls of the bladder, brilliant successes were obtained by resection, but elsewhere the results were worse than useless. Papillomata of the base in this region have a great tendency to malignancy, especially when recurrent after operation or fulguration, so that newer methods have been necessary. It is for just such cases that radium promises much.

Our methods may be described as follows: If the tumor is definitely villous—of the undoubtedly benign type—fulguration is used, but when the tumor has been destroyed, radium, unscreened, is placed against the base or site of the pedicle with one of my cystoscopic instruments and allowed to remain there one hour or more. This may be repeated two or three times at intervals of a few days.

If the tumor is doubtful in appearance, I prefer to take a piece for examination with my cystoscopic rongeur—fulgurating at once, if possible, the site of the excision. Additional fulgurations are given at frequent intervals, radium also being used as much upon the base as possible. When the whole tumor has been destroyed radium is again placed, in several successive treatments, upon the base or previous site of the tumor, endeavoring thoroughly to cover the area, especially if the microscope shows carcinoma present.

The patient is then discharged for a month, when additional applications of radium directly to the previous site of the tumor may be carried out.

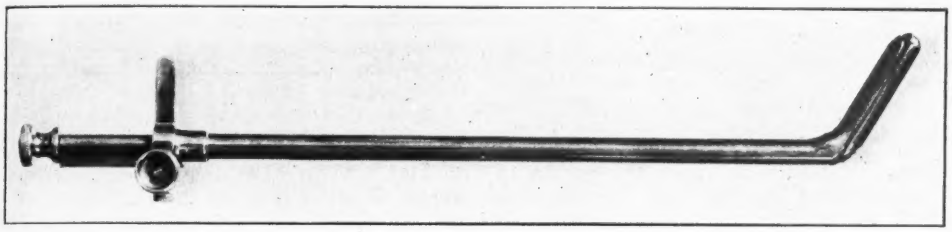


Fig. 6

One must expect a certain amount of vesical irritation and pain as a result of radium, but if the bladder is well filled with water, and the radium screened except on the side next to the tumor, very little general burn of the bladder will result after several hours' use of radium in the bladder with one of my instruments.

DESCRIPTION OF RADIUM INSTRUMENTS

The accompanying illustrations show the different models so well that little description is necessary. The small straight cystoscope which is used in my cystoscopic

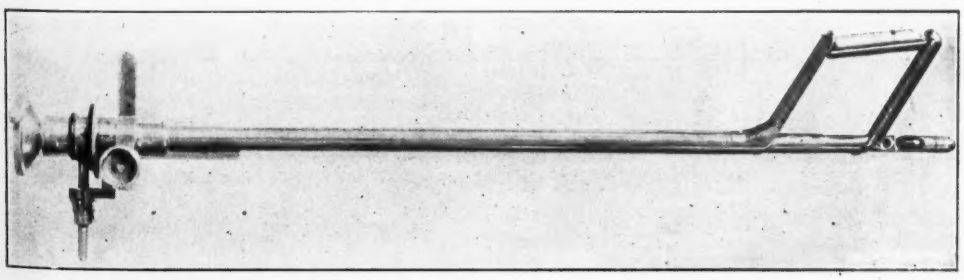


Fig. 7

rongeur was used as a basis around which to construct the various radium applicators. Radium instrument No. 1 (Fig. 1) carries the radium in its beak. The slender glass tube containing the radium is enclosed in a metal capsule which slips easily into the open tubular end of the beak of the instrument and is then held by friction. The instrument is passed through the urethra with an obturator, which is then withdrawn, the bladder washed out and the cystoscope introduced (Fig. 4), making it possible to locate the region to be treated and to apply the capsule containing radium directly upon it. When in the proper position the instrument is held fixed by the mechanical arm shown in operation in Fig. 5.

Redium instrument No. 1 has proven very satisfactory for applications to the neck of the bladder, trigone and certain portions of the lateral and posterior walls. It is usually easy to see very satisfactorily with the cystoscope and to place the radium directly upon the lesion to be treated. But for tumors well out upon the lateral walls of the bladder or upon the upper part of the anterior wall this instrument is not satisfactory, as the end and not the length of the radium tube is presented to the tumor. On this account another instrument was necessary, and to meet this need I have devised a second instrument.

As shown in Fig. 6, radium instrument No. 2 carries the capsule of radium within the beak, which is made up of two hollow halves which, when separated by an external operating mechanism, carry the radium out to a position parallel to the shaft and about 2.5 cm. distant from it, as shown in Fig. 7, where it is in position to be placed against tumors quite remote from the middle of the bladder. This instrument has proven very helpful in many such cases.

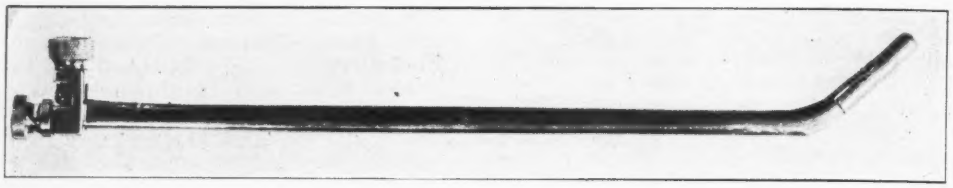


Fig. 8

For tumors on the posterior wall of the bladder still another instrument was desirable in order to place the radium broadside against them, as both Nos. 1 and 2 here presented only the end of the radium tube to the posterior wall, and a third instrument was therefore designed, as shown in Fig. 8.

As seen here the beak carrying the radium revolves about its centre (being operated by two wires in the shaft and a screw outside). Fig. 9 shows the radium carried crosswise to the shaft, in position to be applied under cystoscopic direction upon tumors upon the posterior wall.

With these three instruments it is possible to place the radium flat against a tumor in any part of the bladder, and to inspect it through the cystoscope from time to time during the application. A capsule with a fenestra along one side is usually employed in vesical tumors so that the radium may be placed unscreened di-

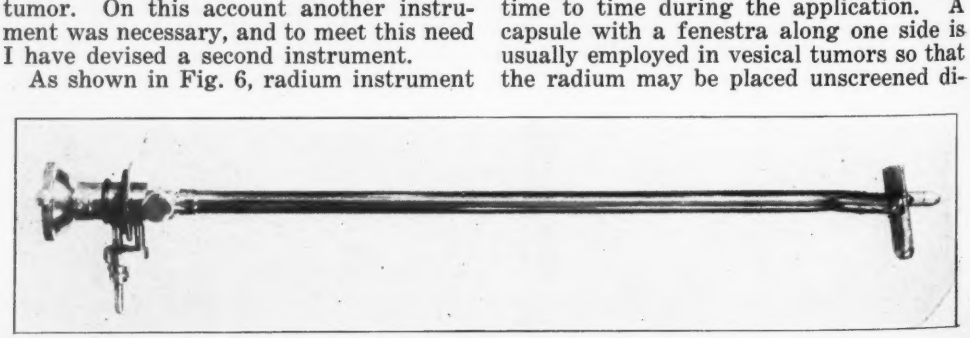


Fig. 9

rectly against the neoplasm, but screened from the rest of the bladder. By this means we have been able to secure all the action of both beta and gamma rays, and at the same time have avoided burning the bladder in surrounding regions, thus making much longer exposures quite possible.

The duration and frequency of the treatments vary according to the case, the tolerance of the individual and the size of the tumor. The instrument is held in the desired position with the mechanical arm, described before, and the treatment continues an hour or more if possible. Intensive treatments are very desirable, and in order to shorten the applications in sensitive cases several hundred milligrams of radium in high per cent. of purity are required to get the best results. The treatments are made every two or three days, if possible, and a different site on the surface of the tumor attacked each time. We have seen many large tumors respond rapidly, but sometimes a few fulgurations may be very helpful in causing large tumor masses to slough away quickly, so that the base can be reached for direct radium applications.

CONCLUSIONS

The hope for cure of cases of cancer of the prostate and bladder is, I believe, now very bright if early diagnoses are made.

Early diagnoses will require education of the public to suspect slight urinary, bladder and prostatic symptoms and to report for examination. Every hematuria should be thoroughly investigated early.

Rectal examinations should be a routine part of every physical, and very hard areas in the prostate should be suspected.

The perineal route alone offers excellent opportunity to cure early cases by a partial radical operation, and more extensive cases by a complete radical operation, as shown by nine definite cases reported.

Radium, applied through the rectum, urethra and bladder, offers great benefit in extensive cases of cancer of the prostate and seminal vesicles by the new methods described. Hope of radical cure is not impossible.

Early cancer of the bladder at the base is effectively treated by radium with the aid of three new cystoscopic instruments described.

Vesical papillomata have a great tendency to malignancy and should have radium applied to their bases after destruction with fulguration.

TUMORS OF THE URINARY BLADDER*

By E. S. Judd, M.D.,
and
S. W. Harrington, M.D.,
Rochester, Minn.

In the bladder as elsewhere in the body the correct surgery of tumors depends upon discovering lesions early and removing them completely. The anatomic conditions of the bladder and the rather inaccessible location of certain parts, together with the necessary maintenance of its physiologic functions, tend to make the technic of operation difficult.

Since the advent of the expert cystoscopist the clinical outlines of these neoplasms in the bladder have been definitely defined. If there is a tumor in any part of the bladder, it is not only demonstrable, but it is usually possible to show whether it is benign or malignant and whether or not it is amenable to surgical treatment. The importance of removing a piece of the tumor through the cystoscope for microscopic examination has probably been overestimated. In most instances the appearance of the tumor reveals its nature. Further, it is generally believed that a large percentage of all tumors of the bladder are potentially malignant and should be treated as such. In papillary tumor, malignancy is suggested if there is necrosis of the papilla, edema at the base of the tumor, or nodules in the mucosa near the tumor. Intractable cystitis also suggests that the growth may be malignant; and any induration felt on rectal or vaginal examination is almost a certain indication that it is malignant.

It is also recognized that tumors having the characteristics of a benign papilloma may recur rapidly, and at the time of the recurrence present all of the characteristics of a malignant lesion. There-

*Read in Section on Surgery, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

fore it is difficult definitely to determine whether a papillary tumor of the bladder is benign or malignant, or what its clinical course will be. Fulguration is sometimes used to test the nature of the tumor; if benign, it usually responds quickly to intravesical treatment; if malignant, it may not change, it may even be stimulated or the slough may not be separated, or it may become covered with a calcareous deposit, which suggest advanced malignant changes in the deeper tissues.

It is quite evident from the recent reports by Geraghty, Braasch, Beer, Buerger and others familiar with the cystoscopic picture in such cases, that they now depend more upon the gross appearance of the tumor in determining its exact pathologic nature than formerly. When the endovesical removal of these tumors was simplified by Beer, it was thought that a method had been discovered that would be effective in curing all such cases. It gradually became apparent, however, that while certain types of tumors of the bladder could be readily removed by this method, other forms were little affected by it. It is now recognized that the endovesical method is applicable only to the treatment of tumors of the benign or relatively benign papillomatous type and that non-papillomatous and definitely malignant papillomatous tumors should not be thus treated.

Several patients have come under our care who previously had been subjected to repeated fulgurations apparently in spite of the fact that the tumor was growing rapidly instead of diminishing in size. One patient had received twenty treatments. These are unfortunate circumstances since in all probability if this patient had been operated upon after the first few fulgurations failed to show improvement, much might have been accomplished. However, too much cannot be said in favor of this endovesical method of treating the type of tumors which respond to the treatment, yet it is very unfortunate to allow an operable case to become inoperable in the process.

The original cutting operations performed some years ago for tumors of the bladder were quite generally unsatisfactory, both from the standpoint of high mortality and early recurrence, but at the present time with a better understanding of the nature of the lesion and with greatly improved operative technic, more radical and, therefore, more satisfactory operations can be performed. One of the principal difficulties in the open operation was the recurrence by implantation which so frequently followed and which was undoubtedly due to the piece-meal removal of the tumor through a small incision without adequate protection of the surrounding tissues. This particular feature has been almost completely eliminated and I think occurs no more often now than in operations for malignant tumors in other regions. With the knowledge that these tumors readily form graft-recurrences it is necessary to pay especial attention to the protection of other tissues during the time they are exposed.

From a therapeutic standpoint, tumors of the bladder may be classified as: (1) Those satisfactorily treated by endovesical methods, and (2) those requiring open operations. There is no question that the benign papilloma will usually respond to fulguration. Exceptions to this would be the cases of multiple papillomas in which the treatments would be numerous and prolonged, or in cases in which the individual, was not tolerant of this kind of treatment. It would be better to do an open operation in either instance.

It has been our custom to have all cases of tumor of the bladder examined cystoscopically at definite intervals following the original operation with the view of keeping down any suggestion of a recurrence. In the past few years we have observed fourteen cases of recurrence following resections which were amenable to fulguration. One of these patients was fulgurated fifteen months after the resection and has been well for two years. One was fulgurated after two years and has been well for four. One was fulgurated after eighteen months, and he now states that he is well, three years after the treatment. One was fulgurated after three years, and has not been seen for three months. One has been fulgurated yearly for the past three years, and was last examined five months ago. One was fulgurated one month after operation and has not been seen for three months.

It seems evident that tumors, frankly malignant at operation, may respond to fulguration when they recur. In the cases in which a resection has been done the granulating surface remaining after the tumor has been removed and the proliferating epithelium seen at the border of the granulating surface may often suggest a recurrence when none actually exists. It would seem best, however, in all such cases to keep close watch of conditions for some time and fulgurate any suspicious-looking area before it has had time to develop into anything of importance.

In case the benign tumor does not respond readily to fulguration it should be removed by open operation. These papillomas, cystoscopically, simulate benign growths, and when they do not behave well under fulguration, it is suggestive that they may be malignant. All definitely malignant papillomas, either of the papillary type of carcinoma or of the type infiltrating the wall of the bladder, are best treated at once by the open operation. It may be permissible to treat a small malignant papilloma by fulguration with a view to radical excision provided it does not respond readily. Undoubtedly the results in such cases at the present time would be much better if all malignant tumors of the bladder were treated by open operation as soon as they are discovered. After this, each case should be routinely cystoscoped every few months for one or two years.

All large benign tumors such as myomas, fibromas and angiomas, should be removed by suprapubic operation.

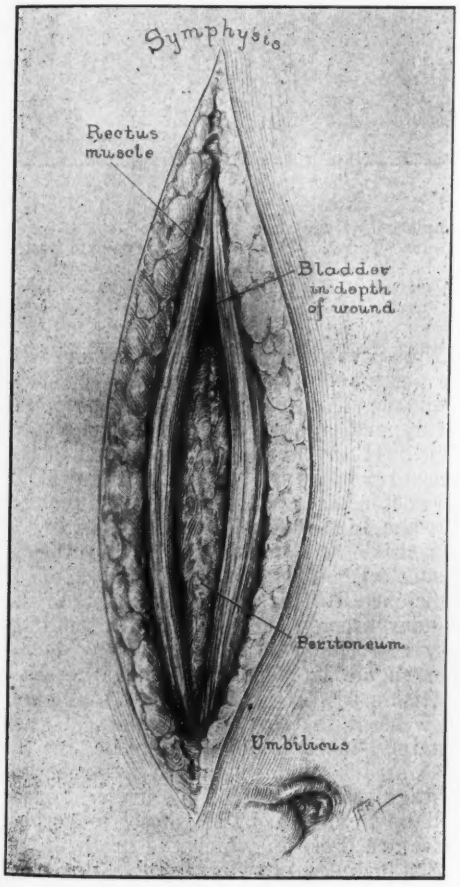


Fig. 1

Incision extending from the umbilicus to the symphysis and down to the peritoneum.

OPERATION

The operative procedure for tumor of the bladder consists in excising the tumor and resecting the portion of the wall of the bladder from which the tumor arises (Fig. 1). A simple excision of the tumor

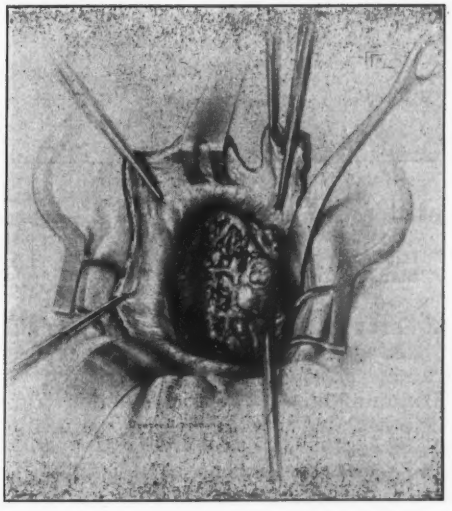


Fig. 2

Large carcinoma involving the right base and lateral wall of the bladder.

is permissible only in the case of a papillary tumor on a pedicle and even with this form of tumor it is better to excise a portion of the adjoining bladder-tissue. Excision of the growth is not sufficient and is no safer than resection. In all cases, the resection should include the entire thickness of the bladder (Fig. 2). Of course this means the invasion of the prevesical space, but with modern technic this adds very little to the operative risk. If the resection is not extensive, the remaining opening may be closed, and drainage established through the bladder. If a large segment of bladder is removed, it is better to drain the space for several days (Fig. 3). The drain may be brought

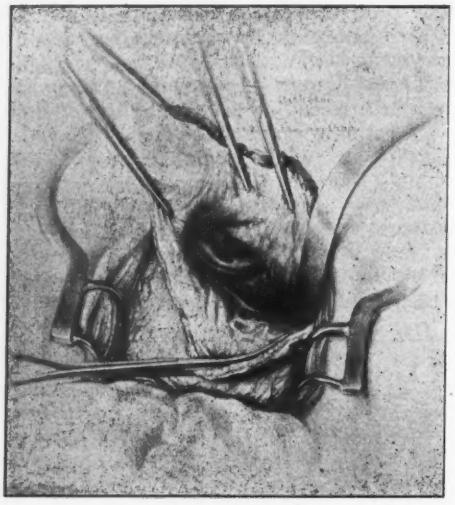


Fig. 3
Excision of growth shown in Figure 2 completed. The extent of this growth made it necessary to remove nearly the entire right half of the bladder.

out through the bladder or along its side. If the prevesical tissues are exposed, drainage is essential (Fig. 4).

At one time, we employed the transperitoneal method in a large percentage of our cases. At present it is not believed to be necessary or to have the distinct advantage formerly ascribed to it. If the peritoneal side of the bladder is involved the peritoneum should always be opened and packed off to allow a complete removal

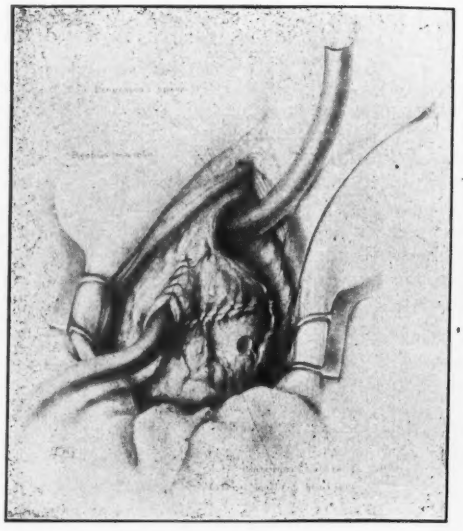


Fig. 4
Completion of the operation. The bladder-edges are sutured together, obliterating the defect in the lateral wall. A large gauze drain is placed in the prevesical space and a rubber drain in the bladder.

of that part of the bladder together with the peritoneum. This requires the performance of a more extensive operation, but apparently does not increase the mortality. If anything is to be gained in the exposure or in the thorough removal of the neoplasms by opening the peritoneum, this should be done, although usually a fair sized incision down to the prevesical tissues without opening the peritoneum is sufficient. In this manner all parts of the bladder become accessible and a satisfactory resection can be made. The operation should be performed with the same precision as for the removal of malignant growths of the stomach or colon. Unfortunately, most tumors originate in the base of the bladder and in a large percentage of cases one of the ureteral areas will be involved. The most inoperable cases are those in which the urethral orifice is included in the growth. Such cases often require total cystectomy, a procedure which as yet can seldom be advised.

Transplantation of one ureter to a new quadrant of the bladder may be done very

satisfactorily (Fig. 5). In a few instances we have transplanted both ureters, but this will seldom be required as the tumor,

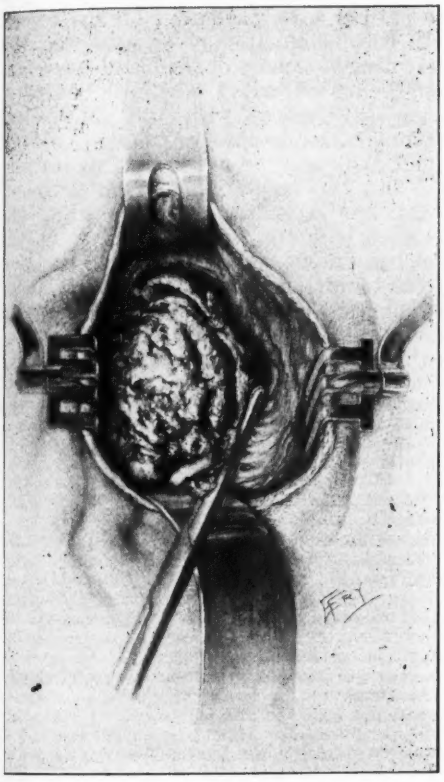


Fig. 5
Papillary carcinoma with a large base extending over the right meatus. The dissection is begun outside the hemostat, the forcep grasping the healthy bladder tissue.

even when it is extensive, will usually involve only one side (Fig. 6). If the growth has completely occluded the ureter, the kidney on that side will probably be functionless, and in such cases, if it is difficult to make a satisfactory transplantation, it is just as well to ligate the ureter. We have followed this procedure in at least twelve cases and have seen no harm of any description arising from it. In none of the cases was it necessary to remove the kidney later. If the divided ureter can be transplanted, it should be done.

Three cases are cited herein which have

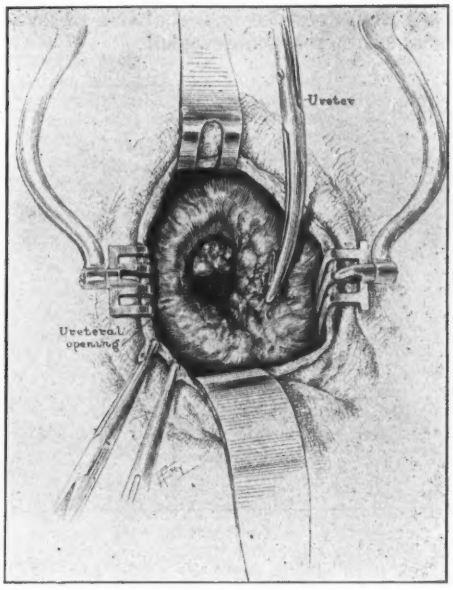


Fig. 6
Same as Figure 5, after removal of the tumor. Half an inch of the right ureter was removed with the growth. The hemostat is grasping the cut-end of the ureter.

been followed for some time. In all the kidneys were shown to be functioning normally; in one, four years; in one, one year; and in one, six months after operation. In these cases, the urine from the transplanted ureter was practically normal. There were a few pus cells in one case. The phenolsulphonephthalein output from these kidneys was normal in two cases, and possibly reduced a little in the other. The case in which the ureter was transplanted four years previously gave a better output from the side operated upon than it did from the opposite side. In two of the three cases ureteral catheters were passed into the transplanted ureters and pyelograms were made showing normal outlines of the pelvis of the kidney. In the third case a good amount of urine was passing from the ureter, yet a catheter could not be inserted sufficiently to make a picture of the kidney. There can be no doubt that such cases are adequate proof that the kidney with a transplanted ureter continues to functionate in a normal man-

ner. Infection does not take place in the kidney in spite of the fact that the ureterovesical sphincter is destroyed.

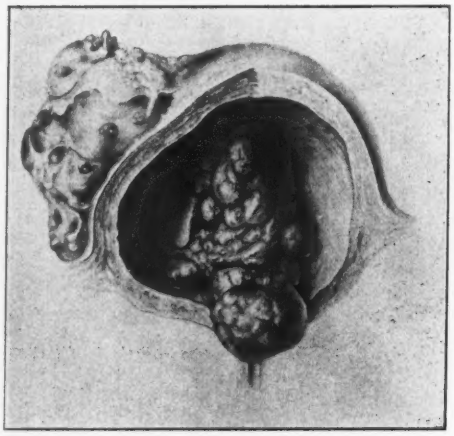


Fig. 7
Frontal view of intra- and extra- vesical papillary angiomyxoma.

A large quadrant of the wall of the bladder may be removed and good bladder-capacity be maintained. In some of our cases a mere funnel remained when the operation was completed, and yet in a short time the intervals between urination had lengthened so greatly as to give the patient a very comfortable existence.

Fig. 8
Sagittal view of intra- and extra- vesical papillary angiomyxoma

In conclusion, it may be said that the treatment of tumors of the bladder is gradually being settled on a definite basis. A large experience with the endovesical treatment has demonstrated the type of tumor that may be cured by fulguration, and also the type that does not respond to this method of treatment. Further experience with the suprapubic open operation has taught us that a radical excision of the tumor of the portion of the wall of the involved bladder and of the prevesical tissues may be done with satisfactory immediate and ultimate results.

PATIENTS OPERATED UPON FOR TUMORS OF THE BLADDER, 1902-1916, INCLUSIVE, AND FROM JANUARY 1 TO NOVEMBER 1, 1917; ALSO 80 PATIENTS TREATED BY FULGURATION SINCE JANUARY 1, 1911
(DR. BRAASCH)

Patients operated upon (1902-1916)	181
Males	139
Females	42
Average age	54 years
Dead (average length of life 20 months)	105
Alive	41
Condition unknown	35
Average duration of symptoms	26 months
Hematuria	154
Extraperitoneal operations	138
Transperitoneal operations	43
Extensive resections of the bladder	49
Intravesical transplantation of ureter	17
Ligation of the ureter	3
Cystectomy (complete extirpation of the bladder)	5
Both ureters transplanted to bowel	3
Both ureters transplanted to urethra	1
Both ureters brought out at the lumbar region	1
Growth excised with cautery or knife and cautery to the base	87
Inoperable cases—palliative cautery	26
Inoperable cases—explored	14
Pathological diagnosis epithelioma or carcinoma	180
Pathological diagnosis — papillary angioma (included in this series)	1
Prostatectomy and operation upon the bladder	3
Diverticulum excised and operation upon the bladder	1
Stones removed and operation upon the bladder	3
Patients reoperated upon for recurrence	16
Patients having previous operations elsewhere	23
Tumor of the bladder	13
Prostatectomy	6
Removal of stones	4

Operations for malignant tumor (Jan. 1-Nov. 1, 1917)	36
Extraperitoneal	29
Transperitoneal	7
Partial resection of the bladder	16
Extensive resection of the bladder	14
Ureter transplanted	8
Ureter ligated	6
Complete extirpation of the bladder (ureters transplanted to bowel)	1
Excision and cautery of multiple papillomas	3
Exploration of inoperable carcinoma	2

ABSTRACT OF A CASE OF AN UNUSUAL TUMOR OF THE BLADDER (Figs. 7 and 8).

Case 149248.—A female 19 years of age came for consultation January 4, 1916. She complained chiefly of incontinence of urine, which began about two years previously when there was partial loss of urinary control and slight pain at the end of urination. The bladder was irrigated for six weeks at that time, but with no improvement in the condition. The patient stated that there had been blood and pus in the urine for two weeks.

On physical examination a large cystic tumor was found in the midline above the symphysis and extending to the umbilicus. Catheterization seemed to reduce this mass to about three-fourths of the original size. Pelvic examination revealed a mass behind the bladder. Cystoscopic examination showed a large tumor-mass involving the right wall and base of the bladder and attached around the sphincter. The left meatus was normal; the right was not seen.

January 11, 1916.—The first stage of the two-stage operation was done: Extraperitoneal removal of an enormous polypoid tumor filling a greatly hypertrophied bladder. There was an opening in the right anterior wall of the bladder through which the growth extended into the right extravesical space. This space was freed and packed off with the idea of removing the growth later.

February 19, 1916.—The second stage was done. An extravesical growth the size of a grapefruit was excised and the opening in the bladder, 2 inches in diameter, was closed. The pathological diagnosis was "papillary angioma."

Although the patient had no symptoms, she returned for examination April 15, 1916. Cystoscopic examination showed a small, recurring papilloma on a pedicle at the right base, which was fulgurated. Cystoscopic examination Oct. 28, 1916, and May 9, 1917, revealed no recurrence in the bladder.

NOTES OF THE OPERATIONS AND OF THE EXAMINATIONS FOLLOWING OPERATION IN THREE CASES (80914, 186610, 163712) IN WHICH ONE URETER WAS TRANSPLANTED TO A NEW QUADRANT OF THE BLADDER AT THE TIME THE TUMOR WAS REMOVED

Case 80914.—Mrs. J. R., 40 years of age. Operation August 6, 1913. Suprapubic resection of the bladder for cancer was done. The lower end of the right ureter was involved; it was excised with the growth; the end of the ureter was cut off; and it was transplanted into the opening in the bladder. Cystoscopic examination was made October 26, 1917, four years after the operation, and showed the right ureter widely open. Clear urine was seen spurting from the meatus, but a catheter could not be passed into the ureter. A Garsan catheter was passed into the left ureter, blocking it completely. An intravenous phenolsulphonephthalein injection was given and the output collected for fifteen minutes. Fifteen per cent. came through the catheter in the left ureter, 17.5 per cent. was collected in the bladder, this having come into the bladder through the right or transplanted ureter. The indications were that the right kidney was performing at least one-half of the renal function, in spite of the fact that the ureter had been transplanted four years previously. The urine was clean, but it was impossible to make a pyelogram of the kidney because a catheter could not be passed into the ureter.

Case 186610.—P. K. O., a male 54 years of age. Operation March 9, 1917. Suprapubic resection of the bladder for epithelioma. The resection involved the removal of one-third of the bladder, including one-half inch of the left ureter. The cut-off end of the ureter was transplanted into another part of the bladder. Cystoscopic examination seven months after the operation showed that the left ureter was widely open and spurting urine normally. A Garsan catheter was easily passed up into the ureter. Intravenous phenolsulphonephthalein appeared in four minutes; 4 % came from the transplanted side and 20 % from the opposite side. A thorium pyelogram showed a normal outline of the pelvis of the kidney. There was no evidence of a recurrence of the carcinoma. This examination seemed to indicate that the function of the kidney was diminished, but in view of the fact that the ureter had been transplanted, it was difficult to get the catheter to fit snugly into it and there was some leakage of urine from that side into the bladder, which undoubtedly helped to make up the 20 %.

Case 163712.—H. B. J., a male patient 69 years of age. Operation July 11, 1916. Suprapubic excision of a tumor of the bladder the size of a hen's egg on the right wall. One-half inch of the lower end of the right ureter was removed with the growth; the cut-off end being pulled into the bladder and sutured so that it projected one-half inch. Cystoscopic examination more than one year after the operation showed an open right ureter and clear urine coming down from this side. The meatus was slightly gaping. A number six catheter was passed readily up the right ureter. Fifteen per cent. phenolsulphonephthalein was recovered from the right side, and 17.5 % from the bladder, showing that the right kidney was doing practically one-half the work. A pyelogram made of the right side showed a normal kidney outline. There was no evidence of recurrence.

Forty-one patients are living and their condition has been ascertained by letter or recent examination. The average age of these patients is fifty years. The average length of time since operation is fifty-

four months, or four and one-half years.

2 patients are alive 10 years after operation.

3 patients are alive 9 years after operation.

3 patients are alive 8 years after operation.

2 patients are alive 7 years after operation.

2 patients are alive 6 years after operation.

3 patients are alive 5 years after operation.

5 patients are alive 4 years after operation.

5 patients are alive 3.5 years after operation.

1 patient is alive 3 years after operation.

6 patients are alive 2.5 years after operation.

4 patients are alive 2 years after operation.

5 patients are alive 1.5 years after operation.

Fifteen of the 41 patients have not returned for examination. In reply to recent letters they state that their general health is good. All but two have gained from 5 to 30 pounds in weight, and these two have maintained their normal weight. One complains of urinary frequency (5 to 7 times at night); the others void from 1 to 3 times at night. Only one complains of frequency during the day. Three say that at times they have pain at the end of urination. None of the fifteen patients has noted hematuri at any time since operation nor has there been any subsequent treatment. The average length of time since operation in these cases is seventy-five months. In seven an extraperitoneal excision of the growth with the cautery was done, in two extraperitoneal resections of the bladder with transplantation of one ureter, and in six transperitoneal excisions of the growth with the cautery.

In the 26 remaining cases the patients have returned for examination at various times since operation. The cystoscopic examination in 12 of these (three to eighty months after operation) showed no recurrence; and in recent letters they state that their general health is good and that they have no bladder symptoms. In the remaining 14 cases, cystoscopic examination revealed recurrences which were later fulgurated or operated upon.

ABSTRACTS OF THE HISTORIES OF THE TWELVE PATIENTS IN WHOM NO RECURRENCE COULD BE DEMONSTRATED FROM THREE TO EIGHTY MONTHS AFTER OPERATION

Case 69825.—H. M., a male, aged 54 years. Operation July 6, 1912: Transperitoneal resection of the left one-third of the bladder with transplantation (intravesical) of left ureter. Cystoscopic examination was made eight months after the operation and showed no recurrence. In a letter received sixty-four months after the operation the patient stated that there were no symptoms. There had been no subsequent treatment.

Case 86191.—Mrs. T. B., aged 50 years. Operation June 25, 1913: Resection of right one-half of the bladder with intravesical transplantation of the right ureter. A cystoscopic examination made forty-six months after showed no recurrence. In a letter in fifty-three months the patient stated that there were no subsequent symptoms and there had been none.

Case 80914.—Mrs. J. R., aged 40 years. Operation April 13, 1913: Extraperitoneal excision with cautery for papilloma. A cystoscopic examination four months later revealed a recurrence. Operation August 6, 1913: Resection of right one-half of the bladder with intravesical transplantation of the right ureter. Cystoscopic examination forty-two months after the second operation showed no recurrence. In a letter forty-three months after operation it was stated that there were no symptoms.

Case 104235.—J. A. W., a male, aged 50 years. Operation May 1, 1914: Extraperitoneal excision with cautery of one large papilloma from the left meatus and one small papilloma from above the urethra. Cystoscopic examination twelve months after the operation showed no recurrence. In a letter forty-two months after operation it was stated there were no symptoms.

Case 110202.—I. U., a male, aged 64 years. Operation July 27, 1914: Excision with cautery of the left one-third of the bladder wall. Cystoscopic examination ten months later showed no recurrence. In a letter forty months after operation it was stated that there were no symptoms.

Case 111047.—F. K., a male, aged 40 years. Operation July 7, 1914: Excision with cautery of multiple papilloma of the bladder. Cystoscopic examination twenty-nine months later showed no recurrence. A letter was received forty months after operation in which it it was stated that there were no symptoms.

Case 130930.—J. P. J., a male, aged 43 years. Operation May 22, 1915: Excision with cautery of papillary carcinoma of the left wall of the bladder. Cystoscopic examination twenty-four months later showed no recurrence. In a letter received thirty months after operation it was stated that there were no sypmtoms.

Case 129025.—Mrs. R. D. B., aged 44 years. Operation April 23, 1915: Excision with cautery of a tumor two inches in diameter of the posterior wall of the bladder. Cystoscopic examination four months later showed no recurrence. In a

letter thirty-one months after operation the patient stated that she had no symptoms.

Case 142875.—Mrs. I. G., aged 46 years. Operation August 16, 1915: Transperitoneal excision of a tumor of the left wall of the bladder. Cystoscopic examination in eight months showed no recurrence. In a letter twenty-seven months after operation it was stated that there were no symptoms.

Case 164075.—Mrs. C. N., aged 54 years. Operation July 3, 1916: Extraperitoneal excision with the cautery of a carcinoma of the base of the bladder. A cystoscopic examination in three months showed no recurrence. In a letter received sixteen months later the patient stated that she had no symptoms except pain at times after voiding.

Case 163712.—Mrs. H. P. J., aged 69 years. Operation July 11, 1916: Extraperitoneal resection of one-third of the mucous membrane of the right wall of the bladder and transplantation of the right ureter (intravesical). A cystoscopic examination in fifteen months showed no recurrence.

Case 113205.—R. N. A., a male, aged 62 years. Operation September 3, 1914: Extraperitoneal excision with cautery of a pedunculated papilloma of the bladder. Cystoscopic examination in eighteen months revealed no recurrence. In a letter thirty-eight months after operation he stated that he had no symptoms.

ABSTACTS OF THE HISTORIES IN THE FOURTEEN CASES IN WHICH THERE WERE RECURRENCES AFTER OPERATIONS AND THE RECURRENCES WERE FULGURATED

Case 68692.—H. G., a male, aged 63 years. Operation June 4, 1912: Transperitoneal excision with cautery of a growth at the trigone. Operation was done nineteen months later for a recurrence, at which time a transperitoneal excision of the growth was made with the cautery. Cystoscopic examination six months later showed no recurrence. Cystoscopic examination in eleven months showed a small recurrence, which was fulgurated. The patient was cystoscoped again in twenty-six months, at which time a second recurrence was fulgurated. He was cystoscoped in sixty months, but no recurrence was found. In a letter in sixty-five months he stated that he had no symptoms.

Case 95746.—J. W. H., a male, aged 56 years. Operation November 22, 1913: Extraperitoneal excision of one-third of the right wall of the bladder and of part of the urethra with intravesical transplantation of the right ureter. Cystoscopic examination was made elsewhere every three months. No recurrence was found for thirty-one months, when three small papillomas were found and fulgurated. He has had repeated cystoscopic examinations since that time, but no recurrence has been found. In a letter forty-eight months later the patient stated that there were no symptoms.

Case 235351.—M. T. R., a male, aged 65 years. Operation March 5, 1915: Extraperitoneal excision with cautery of a large papilloma. Operation again August 31, 1915: Extraperitoneal excision and cautery of two small papillomas of the left wall of the bladder (recurrence). Twelve month later fulguration of a suspicious area was done. In a letter in thirty-two months it was stated that the patient had no symptoms except some frequency at night.

Case 149248.—L. T., a female, aged 19 years. Abstracted elsewhere in this paper.

Case 102695.—Mrs. F, J. H., aged 56 years. Operation March 25, 1914: Extraperitoneal excision and extensive cauterization of a papillary carcinoma of right bladder wall. Cystoscopic examination six months and twenty-six months after operation showed no recurrence. A recurrent growth was fulgurated thirty-nine months after the first operation. In a letter forty-four months later the patient stated that she had no symptoms.

Case 100111.—A. H. N., a male, aged 53 years. Operated upon elsewhere six months before. Operation for recurrence February 7, 1914: Resection of the right one-third of the bladder and cautery applied. Operation November 5, 1914: Transperitoneal resection with cautery for recurrence. Cystoscopic examination six months and ten months later showed no recurrence. A cystoscopy was done in thirteen months, at which time a recurring growth was fulgurated. The patient was cystoscoped again in twenty-seven months, with subsequent fulguration for recurrence. He was again cystoscoped in thirty-nine months, when a suspicious area was fulgurated.

Case 119472.—J. H. H., a male, aged 30 years. Operation December 21, 1914: Extraperitoneal excision with cautery of multiple papillomas. The patient was cystoscoped five months later and a small recurrent growth was fulgurated. He was cystoscoped again in fourteen months and a second recurrence found and fulguration done. In the nineteenth month radium was applied because of a third recurrence. Cystoscopic examination in twenty-two months showed no recurrence.

Case 77917.—W. J., a male, aged 40 years. Operation January 6, 1913: Extraperitoneal excision and cautery of pedunculated papilloma. Cystoscopic examination in nine months showed no recurrence. Cystoscopic examinations were made fourteen, thirty-eight and fifty-one months later, and recurring growths were fulgurated. In a letter in fifty-eight months it was stated that there were no symptoms.

Case 63897.—Mrs. H. O. S., aged 31 years. Operation February 14, 1912: Transperitoneal excision and cauterization of multiple papillomas. Recurrence and operation August 19, 1913: Excision and cautery of one-third of the mucous membrane for multiple papillomas. Cystoscopic examination in thirty and forty-seven months revealed recurrences and fulguration was done. Cystoscopic examination in sixty-six months revealed no recurrence.

Case 58518.—O. H., a male, aged 52 years. Operation September 13, 1911: Resection with cautery of extensive papillomas involving left meatus, trigone, and dome. The patient was entirely well for sixty-two months, when there was frequency with blood clots. Cystoscopic examination revealed a recurrence and fulguration was done. Cystoscopic examination sixty-five and seventy-two months after the first operation did not show recurrence.

Case 106475.—H. K. A., a male, aged 62 years. Operation May 29, 1914: Extraperitoneal excision with cautery of papillary carcinoma of the right wall of the bladder. Cystoscopic examination in nineteen months showed a recurrence and fulguration was done. Cystoscopic examination in forty months showed no recurrence, but a suspicious area, which was fulgurated.

Case 47732.—J. W. M., a male, aged 49 years. Operation January 10, 1911: Transperitoneal cautery-dissection of a papillomatous growth of the base and right wall of the bladder. The prostate was removed at this time. The patient was cystoscoped elsewhere every three months, but no recurrence was found for sixty-three months, when three small growths were fulgurated. Cystoscopic examination in eighty months revealed no recurrence.

Case 171792.—Mrs. J. A., aged 57 years. Operation September 8, 1916: Transperitoneal resection of one-fourth of the left wall of the bladder. Operation August 19, 1917: Transperitoneal resection of one-third of the left wall of the bladder for recurrence and transplantation of the left ureter (intravesical). A cystoscopic examination was made in eleven months, a recurrence was found and fulgurated.

Case 181230.—J. L. K., a male, aged 56 years. Operation December 31, 1916: Extraperitoneal excision and cautery for multiple papillomas of the bladder. Cystoscopic examination made in eleven months did not reveal recurrence.

BIBLIOGRAPHY

1. Beer, E.: "The Surgical Therapy of Benign and Malignant Tumors of the Bladder." Jour. Am. Med. Assn., 1917, lxviii, 680-684.
2. Braasch, W. F.: "Tumors of the Bladder and Their Treatment." Minn. Med., 1918, 1.
"Recent Observations in Cystoscopic Technic." Ann. Surg., 1917, lxv, 615-620.
3. Buerger, L.: "The Pathological Diagnosis of Tumors of the Bladder, with Particular Reference to Papilloma and Carcinoma." Surg., Cynec. and Obst., 1915, xxi, 179-198.
"Tumors of the Bladder; Their Pathology and Particular Reference to the Diagnosis of Papilloma and Carcinoma." New York Med. Jour., 1917, civ, 841-843.
4. Geraghty, J. T.: "Fulguration in Treatment of Bladder Tumors." Surg., Gynec. and Obst., 1915, xxi, 150-154.
"The Result of Treatment of Bladder Tumors." Jour. Am. Med. Assn., 1917, lxix, 1336-1342.
"Treament of Bladder Tumors." New York Med. Jour., 1916, civ, 838-840.

DISCUSSION

Dr. R. L. Sanders, Memphis, Tenn.—I am in position to appreciate this visit and paper more keenly than possibly any one present, for it has been my good fortune to assist Dr. Judd in some of his urologic surgery.

I have nothing to add to what has been said, for the ground has been very completely covered by the essayist. I want to emphasize a few of his good points. In the first place we are aware that the older surgeons and clinicians did not have the keen interest in this subject that we have on account of their lack of diagnostic methods and instruments of precision that we command today. The diagnosis of bladder tumors has been so efficiently cleared up by the use of the cystoscope. By this means one can definitely locate the tumor, tell its extent, operability and character. Many patients are then spared unnecessary operations, and on the other hand, many lives are being prolonged and made more comfortable by early operation and treatment. Operations through the cystoscope, such as fulguration of the tumor also have their place, but as brought out by Dr. Judd, this place is limited. There is such a tendency on the part of bladder tumors, even thought benign to become malignant, that one hesitates to temporize with them. Excision of a portion of the entire thickness of the bladder wall is to be recommended in most cases.

One word about the classification of bladder tumors. Practically all of them spring from three types of tissue,—epithelial, connective and muscular. From epithelial tissue we have the papilloma, carcinoma, edenoma and cyst. Probably more than 90 % of all tumors of the bladder belong to the first two classes, while from connective tissue is derived the sarcoma, myxoma, fibroma and angioma. Springing from the muscle wall we have the myoma.

While it is true that end results are not so good in these cases as one might expect, yet it certainly seems worth while to go after them in as thorough and radical a way as is reasonable. There is probably no tissue in the body where recurrences are more prone to occur. Neither is there elsewhere such a liability for benign conditions to become malignant.

Regarding the transplantation of the ureters, it seems a great accomplishment to be able to do this and maintain a good functioning kidney. Unfortunately the greater number of tumors are located in close proximity to the utereral orifice and the question of wide excision always imperils the kidney. Now that Dr. Judd is able to handle this issue by successfully transplanting the ureters it certainly simplifies matters and makes the outlook much more favorable.

Dr. Bransford Lewis, St. Louis, Mo.—As we work on this subject we find the greatest stumbling block—at least I do—in the too-late arrival of the patient, for in many cases the condition is malignant. Often they come too late to make me think that they are still operable; that the chances for an operation and for giving a durable relief are great.

Nobody can discount the great success that Dr. Judd himself would have, and yet out of the 180 cases 105 are dead within a year. That is a questionable success when it comes to the enduring success. We can take out those tumors, but can we say that we are going to restore the patients to an enduring state of health? Dr. Judd himself can not do that, and I think the greatest stumbling block is the delay of the patient in arriving at the hospital so that the lesion can be removed completely.

Of course we unite in our agreement that the difference between a benign and malignant tumor makes practically all the difference in the world to the patient. If that tumor is benign, I believe that the most successful treatment in the world is by fulguration, and I think if the sta-

tistics of operating benign tumors are compared with the use of fulguration, decidedly, I think, the choice will be in favor of fulguration; and those men like Edwin Beer and others hold this view. I would not advise an open operation of any benign case early. I believe there is a more prolonged success in fulguration than in the open operation.

As to the more malignant forms, I think there are some things to be said in addition to what Dr. Judd says. For instance, radium is rapidly assuming a very important position in this question, and there are a good many men who work on this line who strongly advise the use of radium in border-line cases, whether they are operable or not, and they firmly believe from their experience that the use of radium for a while, in successful operations, makes those cases that are amenable to fulguration, after the use of radium, bring a success which is not obtainable by the fulguration alone.

I have had three cases in the past ten months. In eleven cases of carcinoma we have employed radium, followed by fulguration, and in three they have proved very satisfactory indeed. One was a malignant tumor, papillomatous in character, about the size of a lemon, which, when we used the radium and then the fulguration, disappeared completely. The patient has been restored and we have had success to that degree.

Hugh Young has used radium, followed by fulguration, with a large success, in a large number of cases, and that ought to be taken into account in these cases.

Dr. John R. Caulk, St. Louis, Mo.—Dr. Judd has certainly, in a most successful way, presented the surgical aspect of bladder tumors, which is the most perplexing and, to me, discouraging branch of urological surgery. Concerning papillomas of the bladder practically all of the benign tumors will yield promptly to high frequency burning through the cystoscope, and no benign papilloma should be surgically attacked unless it resists high frequency burning. The majority of malignant papillomas will also melt under such treatment. The infiltrating papilloma and epithilioma of the bladder, on the other hand, are not effected, and require surgical dealing, and our only hope in treating them surgically is to get them early. This is the most serious consideration. Of 75 cases which we have had, the average duration of symptoms was almost ten years. Due to the fact that the one characteristic symptom of bladder tumors is painless bleeding, which clears up spontaneously, many patients and physicians are fooled. We must spread the knowledge that blood in the urine is representative of serious trouble and that it does not exemplify a straining or congestion at the neck of the bladder. If this idea can be thoroughly disseminated we may hope to get our tumors early. I have had but two cases out of this fair sized series which were really operable cases, and they are the only two which I have cured. The others have been so extensive that surgical resection was out of the question. They have been palliated by burning and several pleasant results lasting several years have followed.

I concur with Dr. Judd that total cystectomy is rarely indicated. Immediate mortality is high and the curative results are not in proportion to this mortality.

If cancer is localized it can be removed by partial resection, either intra- or extra-peritoneally.

In individuals with extensive carcinoma of the bladder with necrosis and intense cystitis frequently considerable comfort is given them by the intravesical injection of Bulgarian bacilli. I have had no experience with radium. I trust it will prove of service. At the present time the problem of dealing with cancer of the bladder is indeed very discouraging.

Dr. Judd (closing).—One hundred and five of these patients died. Fifty were inoperable; therefore operation was not attempted. The average length of life of the 105 patients after operation was twenty months.

As Dr. Lewis has emphasized, there is no question that fulguration is the choice of treatment in benign cases, with possibly the one exception of multiple papilloma. Beer has insisted that it is questionable if malignant tumors should be treated with fulguration. There is no reason why these multiple tumors should not be operated upon suprapubically.

Radium was of little or no benefit in our cases. In one case, however, the patient seems to be doing quite well, and he is much more comfortable.

At least four malignant papillomas that had been treated by fulguration I have since operated upon, because the patients did not seem to be doing so well as they should. Personally, I do not believe a malignant papilloma should be treated by fulguration.

In this series of 45 cases concerning which we have information at the present time, 25 patients have been well more than three years, and 15 have been well more than five years.

INTERPRETATION OF LUMBO-SACRAL BACKACHE IN WOMEN*

By Edw. H. Richardson, A.B., M.D., F.A.C.S.,
Associate in Clinical Gynecology, Johns Hopkins University and Hospital, Baltimore, Md.

No one who has had a large experience in the practice of gynecology would hesitate to affirm that lumbo-sacral backache is one of the most frequent of all the complaints of women. Similar testimony is abundantly available from the reports of the general practitioner, the medical con-

*Read in Section on Surgery, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

*From the Gynecological Department of the Johns Hopkins University.

sultant, the obstetrician, the neurologist and the orthopedic surgeon. Indeed, this symptom is so commonplace that I am frank to confess it required a good many years of active clinical work for me fully to appreciate the fact that backache is not merely a complaint, to be vaguely associated with "neurasthenia" — whatever that may be—but that it definitely indicates the existence of a specific pathological condition, which materially discounts the efficiency of the individual sufferer.

It is my purpose in this communication to classify and discuss briefly the lumbo-sacral backaches of women from the standpoint of etiology, and particularly to point out the exact relationship of gynecological affections to the production of these pains.

It is important at the outset to have a clear conception both of the location and the character of the pains under discussion. They are dull in character, usually are referred to the lumbar or sacral regions, quite commonly to one or both sacro-iliac joints, and not infrequently radiate down one or both legs. Their intensity varies greatly both in the same and in different individuals, and is an unreliable guide as to the degree of departure from the normal exhibited by the specific causal lesion. They are aggravated by physical exertion, and usually by menstruation. Associated with them are limitation of motion, frequently also local tenderness, varying degrees of spasm in the erector spinæ muscle groups, an interesting group of abnormal postures, and certain symptoms referable to the abdominal or pelvic viscera.

This clinical syndrome is designated in the literature under a variety of titles, among which are neurasthenic spine, traumatic spine, occupational backache, chronic lumbago, uterine backache, rheumatism, relaxation of the sacro-iliac joint, and a number of others.

It is evident, therefore, that much confusion exists regarding the significance of these symptoms and their accurate scientific interpretation. To avoid this, it is absolutely essential to fix in our minds certain fundamental anatomical and mechanical facts, which have been repeatedly emphasized through the splendid work on this subject of our orthopedic friends,—namely, that the weight of the upper half of the body is transmitted to the pelvis through the spinal column, which is a flexible, multi-jointed structure, dependent for its efficiency upon ligamentous and muscular support; that the load it bears is mostly anterior; that normal equilibrium is maintained through muscular effort; that the bony pelvic girdle receives this load through the lumbo-sacral and sacro-iliac articulations; and that contiguous to the latter are the important lumbo-sacral cords and the sacro-iliac plexus of nerves.

From this it becomes apparent that the correct interpretation of lumbo-sacral backache in an individual case involves primarily a consideration of the conditions giving rise to strain, disease, or injury to the lumbar spine, its articulations with the pelvis, and the supporting structures of both. For practical purposes these conditions can be classified etiologically, as suggested by Reynolds and Lovett,[1] into three great groups:

I. Orthopedic,

II. Gynecological,

III. Combined or mixed.

I. Orthopedic Group.—Lovett[2] has made a very convenient and helpful subdivision of this group into (1) the Arthritic cases; (2) the Traumatic cases; and (3) the Static or Defective Balance cases.

1. *Arthritic Cases.*—It is universally conceded now that the pelvic articulations are true joints in all respects and, as Goldthwait[3] and others have pointed out, that they, like other joints, are subject to tuberculosis, to infectious arthritis, to atrophic arthritis, to hypertrophic arthritis and to malignant disease. The acute cases may offer considerable difficulty in differential diagnosis, but this discussion is concerned with the possible existence of chronic arthritis as a cause of backache, and this can be determined through a careful history, coupled with orthopedic and radiographic examinations. A process of exclusion may be necessary to identify the infectious type and, in this connection, it is highly important to search assiduously for remote foci of infection. The hypertrophic cases, according to Marshall,[4] occur typically in middle life, or later, and represent the results of a life-time of wear and tear, stress

and strain, minor infections, injuries, etc. Gouty deposits may be associated with these bony overgrowths, and together they may produce either ankylosis of the joint, or neighborhood irritation of nerve trunks, or both. Their detection is not a difficult matter, particularly with the aid of the radiograph.

2. *Traumatic Cases.* — Injury, too, is everywhere recognized as a cause of chronic backache. Usually the recognition of this group is not difficult, but Marshall shows, through an illustrative case, that partial dislocation of the lumbo-sacral joint may occur as a very gradual process, through long-continued postural error and constant mechanical insult, giving rise to a clinical picture of severe backache with associated symptoms that may be quite baffling.

3. *Static or Defective Balance Cases.*— These form the largest and most interesting class of the entire orthopedic group. Thanks to the painstaking studies of American orthopedic surgeons, we are now able to recognize and successfully to treat these chronic sufferers. Beginning with a publication by Goldthwait and Osgood[5] in 1905, there have appeared at intervals since other articles by Goldthwait,[6] a joint study by Reynolds and Lovett,[1] one by Dickinson and Truslow, an independent contribution from Lovett,[2] and one from Marshall,[3] which collectively leave little to be desired as a comprehensive study and interpretation of the several factors involved in the production of static backache.

The gist of this whole matter is the conception of *habitual defective balance,* with its constant strain upon the supporting ligaments and muscles of one or more of the lower spinal and pelvic articulations. Herein lies the significance of ascertaining the existence of faulty posture in the individual case through a careful inspection of the uncovered back with the patient standing erect. The deformity observed will commonly be one of three types: (1) slight lateral deviations of the spine; (2) the round-shouldered, hollow-backed type of Reynolds, which corresponds to the "gorilla" type of Dickinson and Truslow; (3) the over-feminine type of Reynolds, characterized by over-extended knees, large hips, prominent buttocks, hollow backs, relatively small waists, prominent breasts and often a tendency to obesity, corresponding to the "kangaroo" type of Dickinson and Truslow.

Now, then, bearing in mind that the faulty posture is responsible for the strain on the joints and their supporting structures, and that the strain in turn is the exciting cause of the pain, our problem resolves itself into a consideration of the factors which may give rise to such abnormal attitudes, and which are not included in the traumatic and arthritic groups already discussed.

These are (1) bony abnormalities, particularly in the transverse and articular processes of the fifth lumbar vertebra; (2) a chronically tilted pelvis, from disproportion in the length of the legs or from a fallen arch; (3) congenital and acquired individual variations in the efficiency of the joint supports; (4) abnormal degrees of mobility in the lumbo-sacral and sacro-iliac articulations; (5) the "ether back," which, by the way, can be largely prevented through the intelligent use of supporting cushions so arranged, both upon the operating table and subsequently in the bed, as to maintain the *individual patient's* normal lumbar lordosis during the period of unconsciousness; and (6) protective attitudes, which represent subconscious efforts to ease pain or lessen discomfort from visceral ptosis[8] or disease.

A discussion of each of these factors would take me far beyond the scope of this paper, so that I must content myself with their mere enumeration and pass on to a consideration of the second subdivision of my theme.

II. Gynecological Group. — For many years physicians have appreciated the fact that there frequently exists a definite relationship between the chronic back pains of women and abnormalities of the reproductive system. That much misconception is still abroad, however, regarding the exact mechanism of this relationship, no one can doubt who participates in the work of any active gynecological clinic. For here are encountered far too often individuals who have been subjected to a variety of operations upon their pelvic

viscera, undertaken for the relief of backache, who are still seeking relief, now, however, not only from the backache but also from the unfortunate consequences of ill-advised surgery. The long and formidable list of surgical procedures which have been devised for retrodisplacement of the uterus constitute at once a monument to the mechanical ingenuity of the surgeon and a sad commentary upon his diagnostic skill. Pelvic surgery would be spared much of this disrepute if we would forever banish from our minds the idea that simple, uncomplicated retrodisplacement of the uterus is a frequent cause of backache. This idea appears to have originated from a still prevalent notion that a displaced uterus exerts a constant tug on the spine, which, in turn, gives rise to backache, and that if the latter is to be relieved, the uterus must first be lifted up and secured in a forward position in order to remove the tug. This is only partly true. There is, to be sure, a tug in these cases, but not upon the spine; for let it be remembered that neither the uterus nor its appendages have any direct anatomical attachment to the spine whatsoever, save through the two utero-sacral ligaments, and any one who believes that the weight of the uterus pulling on the sacrum through these ligaments is the cause of the backache in these cases deserves pity rather than condemnation.

In my judgment, if we exclude the rare cases of spinal metastases from malignant pelvic neoplasms and the pelvic arthritis cases of gonorrheal and puerperal sepsis origin, we must consider the whole group of backaches produced by pelvic disorders as static in origin. That is to say they are the result of strain upon the muscular and ligamentous supports of the lumbosacral and sacro-iliac articulations due to defective balance or faulty posture subconsciously assumed as a protective or ameliorating measure against intrapelvic discomfort. Such discomfort may be produced by a variety of gynecological disorders, among the commoner of which are the following:

1. Normal or ectopic pregnancy. It is well known that during pregnancy there is a slight increase in the degree of mobility of the pelvic joints, and that they are particularly liable to strain at this time. Intrapelvic discomfort during the early months of pregnancy may arise from a number of conditions and is almost the rule. Postural backache as a result of effort to overcome this discomfort is to be expected, therefore, and it does occur not only in the early months, but also later when the actual weight of the enlarged uterus materially exaggerates the normal lumbar lordosis and thus produces strain.

2. Premenstrual or menstrual backache occurs in 65 % of women according to Berkeley,[9] and certainly in this percentage, at least, do we encounter catamenial pelvic discomfort. This is frequently intensified through associated disease, but the fundamental cause is congestion. A similar condition may arise from circulatory stasis or varicosity in the ovarian and anastomosing veins, enclosed in the infundibulopelvic ligaments, particularly in association with descensus of the uterus, as pointed out by Hutchins.[10] One condition illustrates active and the other passive congestion as causes of pelvic discomfort, but the frequently associated backache in both conditions represents again a postural strain on the pelvic joints resulting from subconscious effort to relieve the discomfort.

3. Malpositions or displacements of the uterus and ovaries often excite both circulatory and mechanical factors in the production of pelvic pain. For they are apt to give rise not only to congestion, but also to a downward drag or pull upon both the supporting structures, together with their peritoneal coverings, and also upon the neighboring viscera. Concomitant backache results, however, not from any direct tug upon the spine or pelvic bones, but it arises from an habitual protective attitude or postural strain upon the pelvic joints and their supporting structures.

4. Obstetrical injuries, particularly to the pelvic floor, are familiar predisposing causes of varying degrees of prolapse of the pelvic viscera. Often before any actual descent of these organs occurs, such patients suffer from an uncomfortable sensation of weight or bearing down in the pelvis on standing or walking. They usually come to us complaining of backache, how-

ever, and here again it is due to a faulty posture which the individual has gradually assumed in order to minimize the pelvic discomfort, but which, unfortunately, has resulted in a chronic strain of the lumbo-sacral and sacro-iliac articulations, together with their reinforcing muscular and fascial supports.

5. Pelvic inflammatory disease, of whatever specific cause, either through the pain of acute peritonitis, or that of chronic adhesions involving the visceral or parietal peritoneum, is one of the commonest of all gynecological disorders. It is almost invariably associated with lumbo-sacral backache, but here again if we exclude the infectious arthritic group, the remaining majority represent postural effort to protect and ease sensitive pelvic structures.

Benign and malignant neoplasms of the uterus and ovaries are frequently accompanied by chronic lumbo-sacral pains. Metastatic tumors to the lower spine, meninges, or pelvic joints will explain only the rare and exceptional case. The others are readily understandable, however, under the conception of postural strain, because while a large benign tumor may strain the posterior joint supports through its weight, a small, malignant one may so sap the individual's vitality as materially to diminish muscle tone; the joint splints being thus weakened, faulty posture and strain naturally ensue.

These several illustrations amply suffice to emphasize the point I wish to bring out, namely, that whether the individual gynecological disorder exemplifies some rare congenital anomaly, or is an acquired additional anterior load, or a circulatory disturbance, or a trauma, or a malposition of viscera, or an infection, or a neoplasm, or any combination of these, it becomes a factor in the production of lumbo-sacral backache only in so far as it produces sufficient intrapelvic discomfort to lead to the habitual assumption of a faulty posture in an effort to relieve or minimize that discomfort.

III. Combined or Mixed Group.—From what has already been said, it is apparent that a large number of these backaches can be correctly interpreted only by recognizing that they indicate a combination of both orthopedic and gynecological factors, and that if we are to relieve them, our therapeutic efforts must embody corrective measures appropriate to both sets of disorders.

To summarize, the determination of the specific cause of lumbo-sacral backache in a woman involves a careful study both in the domain of the orthopedist and in that of the gynecologist. In the former, we must scrutinize the lower spine, the lumbo-sacral and the sacro-iliac articulations very closely for evidences (1) of arthritis; (2) of injury; and (3) of chronic strain from one or more of the causes enumerated above. In the latter the point to remember is that, with rare exceptions, whatever the nature of the particular gynecological disorder, it produces lumbo-sacral backache only through the strain incident upon faulty posture, and that no matter how skillfully our operative therapy is executed, it will often fail utterly to relieve the backache unless supplemented by orthopedic measures which will restore normal balance.

BIBLIOGRAPHY

1. Reynolds, E., and Lovett, R. W.: Jour. Amer. Med. Ass'n, 1910, LIV, 1033.
2. Lovett, R. W.: Jour. Amer. Med. Ass'n, 1914, LXII, 1615.
3. Goldthwait, J. E.: Ibid., 1917, XLIX, 768.
4. Marshall, H. W.: Boston Med. and Surg. Jour., 1916, CLXXIV, 591.
5. Goldthwait, J. E., and Osgood, R. B.: Ibid., 1905, CLII, 593.
6. Goldthwait, J. E., loc. cit.
   Goldthwait, J. E.: Boston Med. and Surg. Jour., 1911, March 16.
   Goldthwait, J. E.: Ibid., 1913, CLXVIII, 128.
7. Dickinson, R. L., and Truslow, W.: Jour. Amer. Med. Ass'n, 1912, LIX, 2128.
8. Burckhardt, H.: Ergebnisse d. Chir. u. Orthop., 1912, IV, 285-386.
9. Berkleley, C.: Practitioner, Lond., 1911, LXXXVII, 474.
10. Hutchins, H. T.: Boston Med. and Surg. Jour., 1915, CLXXII, 18.

1200 *N. Charles St.*

DISCUSSION

Dr. George Bennett, Baltimore, Md.—There are lots of backaches and back conditions which we have not and will not overcome until every one gets together on it. The orthopedic branch of the profession has been very much interested and very busy for fifteen years trying to classify these conditions, and the sacro-iliac joint was given credit for everything from the floating rib to the tip of the coccyx, and from the iliac to the fifth lumbar section.

Just as faulty posture predisposes to the development of flat-foot conditions, just as knock-knee deformity is an injury to the femur, or that bow-legs predisposes to the development of a hypertrophic arthritis, so these things are produced by pelvic conditions and distort the pelvis, just so all of the factors must be taken into consideration. It seems to me that the orthopedists of today have to learn a lesson; to get to work with the children and clear up this group of cases. It seems to me some of the gynecologists have learned a lesson, and that when they do not find anything in the pelvis, men look to the back for the cause. Many of us have learned not to hesitate to look at the back. Take the clothes off and the shoes off and let them stand on a level object and see if you can not find something. You will be surprised how all backs look alike to you, but after you have studied a few hundreds you will see the individual who throws the shoulders back and gets the typical debutante slouch we have today, and the resulting pain; and you will be able to recognize by placing your thumb on the posterior spine that the individual has a short leg and has a strain on the fifth lumbar juncture.

Many of them you will find, after you have measured the length of the leg, it is not the leg that causes the distortion of the pelvis, but it is some dissymmetry of the pelvis itself. If you find nothing in the pelvis to account for it, look to the fifth lumbar vertebra. The loss of utility of the fifth lumbo-sacral joint does not produce the symptoms at that point, but at the point above, in which the vertebra has to produce two joints rather than one. It seems to me the one big result we should all learn here today is that we have all got to get together on backache, because we are getting so we can not find any more lesions than we have already described.

Dr. W. S. Gardner, Baltimore, Md.—We ought to learn to look our patients over. That is one of the most difficult things, apparently, for physicians and surgeons to learn. They can not find out what is the matter with the patient unless they examine them.

Another point the doctor made that I want to underscore is that a good many of these conditions were brought about by displacement or congestion in the broad ligament and the ovary, and I am quite sure a large percentage of our failures in relieving these backaches, due to the displacement of the uretus, are due not so much to the uterine displacement as to congestion of the ovaries and the association of the engorgement of the broad ligament. I think that accounts, very largely, for the failure to relieve the backaches that are due to these displacements and to backaches that are due to something else.

I am inclined to think that these backaches are more or less in the same class, in the left side, that you are familiar with, associated with cervical troubles. If the woman has any trouble in the cervix it gives a pain, but she does not complain of the left iliac region. I believe that the majority of the back pains are in the same class, and in correcting these displacements the utero-ovarian ligament should be shortened. Bring the uterus up, and in that way you control the congestion both in the ovaries and in the broad ligament.

Dr. M. Y. Dabney, Birmingham, Ala.—For some time, in the diagnosis of hydronephrosis of the kidney, due to kinking of the ureter, it has been customary to inject the kidney pelvis to see if the typical pain can be reproduced. In other words, we attempt to prove before operation the source of the symptoms. In like manner in the occasional case of backache supposed to be due to retrodisplacement of the uretus we can do the same thing by using the commonly despised pessary (Smith-Hodge type) and save the patient much discomfort and often an operation by being able to say definitely whether or not we may reasonably expect to relieve the condition by suspension of the uterus.

The average case of retrodisplacement does not cause backache, and except when the abdomen is opened for another purpose should no more receive surgical attention than small symptomless varicocele in men or tiny hemorrhoids which are giving no trouble.

Orthopedic factors will be found to be far more commonly the cause of backache in women than gynecological lesions. The happiest result can only follow a co-operation of these two important branches.

Dr. Richardson (closing).—I do not think it necessary to say anything further except to agree that very frequently the pessary can be used to determine whether or not a suspension operation will be helpful. By lifting the uterus up we relieve the congestion and the pelvic discomfort, and that is the point. The pessary may thus be a helpful aid to diagnosis in finding out the cause of backache, but you can not draw a definite conclusion, even after lifting the uterus up, until you supplement that by the orthopedic measure of correcting faulty posture. The backache may go on as bad as ever, unless this is done, as has occurred repeatedly in my practice. Only when I began to look up the orthopedic side of this condition did I recognize that oftentimes the faulty posture which has been assumed is an important part of the trouble. You must supplement surgery by proper orthopedic measures to overcome faulty postures and, conversely, orthopedic measures to correct faulty posture must be supplemente l in many of these cases by gynecological surgery in order to remove the underlying cause of the faulty posture.

BLOOD TRANSFUSION IN EMERGENCY SURGERY—SODIUM CITRATE—INDIRECT METHOD*

By Edward T. Newell, M.D., F.A.C.S., Chattanooga, Tenn.

Less than a year ago Lewisohn, in a paper before the Chicago Medical Society, brought to the attention of that Society and the medical profession throughout the country the simplicity and the efficiency of the so-called sodium citrate method of blood transfusion.

At the meeting of the American Medical Association in New York, in June of this year, Bertram Bernheim, of Baltimore, read a paper upon the same subject, endorsing the sodium citrate method.

As you well know, Bernheim is a blood vascular surgeon of Nation-wide reputation, having devised many instruments in this special field of work, more especially the Bernheim canulas for direct transfusion of blood; a set of which is in the armamentarium of nearly every well-equipped hospital in this country. Bernheim came out with the emphatic statement that Lewisohn had revolutionized blood transfusion and that all instruments on the market at the present time, including his own, would from now on be relegated to the past. Having done several hundred transfusions, under all conditions, such a statement coming from an authority of his kind make me, who for the past several years have been intensely interested in this subject, investigate in a modest way the special advantages of the sodium citrate method of transfusion.

I am free to confess that I have always favored the direct method of transfusion, after the fashion of J. Shelton Horsley, of Richmond, Va., and the few papers that I have written upon this and allied subjects will show my preference for whole-blood transfusion. But, realizing that to do this direct method well, artery-to-vein, one had to have specially trained assistants, and had to do it frequently, the simplicity of the citrate method appealed to me. When, as Dr. Lewisohn says, "it can be mastered by any physician," and the equipment consists only of a 2 per cent. sodium citrate solution, a 500 c. c. graduate, a glass stirring rod and an ordinary gravity Salvarsan outfit, or rather saline infusion outfit, I began to be converted.

The question naturally arises, is citrated blood as good as whole blood? This is a question that has not been thoroughly threshed out to my satisfaction. Microscopically the sodium citrate does not cause any change in the cellular elements of the blood, but biologically we do not know just what takes place. Dr. Horsley said, in discussing Dr. Bernheim's paper before the American Medical Association, "When the blood is exposed to air or even when it comes in contact with the inside of paraffined glass tubes, some small indefinite physiological or chemical changes may take place that would make it inferior to that passing from artery to vein, when the blood only comes in contact with the endothelial cells lining the vessels." This probably is quite true, but to all practical purposes the transfusion of citrated blood accomplishes the same results that whole blood does by the direct method, and it is simplicity and results that we wish to obtain.

Percy, of the Ochsner Clinic, Chicago, has an instrument that overcomes in part the condition above mentioned when the blood comes in contact with the air. His method is an indirect method of whole blood transfusion, a modification, I should say, of the Lindeman syringe method. He has a large glass cylinder of about 500 c. c. capacity. This is coated inside with paraffin and contains 50 c. c. of liquid paraffin in the lower extremity. The lower end is drawn out to a fine point for insertion into the vein, while the upper end has a rubber tube attached for suction when he draws the blood from the donor and compression when he delivers it to the recipient. As the blood flows into the cylinder, it contacts with the liquid paraffin in the lower end and raises it up until the cylinder is full. This same paraffin follows the blood down as it is given to the recipient; thus the transfused blood only comes in contact with the liquid paraffin. The instrument,

*Read before the Southern States Association of Southern Railway Surgeons, Auxiliary to the Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

however, is large and cumbersome and requires three well-trained men for its use. The veins of both the donor and the recipient have to be cut down upon and exposed. The whole procedure must be done rapidly. Percy claims that with this instrument he can draw from a male adult 200 c. c. a minute and deliver 250 to 300 c. c. a minute, which makes the transfusion quite rapid. I had the pleasure of seeing Dr. Percy do a very rapid and successful transfusion before the Clinical Congress of Surgeons, in Chicago, a few weeks ago.

Now just what are the advantages and disadvantages of this method?

ADVANTAGES

(1) The equipment is inexpensive and always at hand.

(2) The technic is quick and simple; simple as any intravenous infusion.

(3) No trained assistants are necessary.

(4) The donor need not be in the same room with the recipient; no psychology; the recipient need not even be removed from the bed.

(5) No blood vessels are divided nor destroyed; no ugly scars are left.

(6) The quantity given can be accurately measured; and there is no clotting of blood by this method.

DISADVANTAGES

(1) Possible biological changes in the blood. However, this is to be ascertained by further investigation.

(2) Chills occur after administration of citrated blood in twenty to twenty-five per cent. of cases, but they are never serious.

(3) Possible toxicity of the blood if extremely large quantities of the citrated solutionare given, but 2500 c. c. of a 0.2 % solution can be given before the average dose is obtained, and this quantity is seldom, if ever, administered at one sitting (5 Gms).

INDICATIONS

As I am dealing only with this subject in so far as it concerns emergency surgery, the indications for its use are plainly great loss of blood following any traumatism, self-inflicted or otherwise, or from a ruptured gastric or duodenal ulcer; ectopic gestation, etc.; but more especially following railway accidents, where legs, arms, etc., have been mangled or the main blood vessels torn anywhere in the body; also for secondary hemorrhage following operation. The patient will come to you shocked, often in a state of collapse. It is in these cases that a pint of blood judicially administered would be the turning point in the case. This can then be followed later by a restorative operation, one that the patient could not possibly have withstood previous to the transfusion. As I look back a few years on some severely traumatized and shocked cases that I have operated upon and lost, and some of those of my confreres, I cannot help feeling that if some of them had been transfused with blood first, and later operated upon, a few of them would have recovered. It is in just such cases as outlined above that you may omit all the usual laboratory tests concerning proper donors, etc., using almost any healthy, robust young adult of like race. You should always see that there is no clinical evidence of syphilis in the donor. This method, then, is applicable in any small village or hamlet. The equipment as above outlined is always available and the drug, sodium citrate, can always be had. When time permits, the blood of the donor should be tested previously with that of the recipient, especially for agglutination and hemolysis. A Wassermann should be made and such conditions as tuberculosis or any acute infectious disease in the donor should be eliminated. A few authorities still contend, however, that it is not necessary to test the blood for agglutination, hemolysis, etc., as they have done numbers of cases without making these tests, and have had no unpleasant after effects. However, I am of the very positive opinion that whenever time will permit the agglutination and hemolitic actions of the corpuscles and serum of both donor and recipient should be tested.

All of the tests for agglutination and hemolysis are quite simple and similar and require only about one hour to make them. The technics of the tests have been published so often in the past year in the *Journal of the American Medical Association*, and other journals, as well as in standard works on this subject, that I shall not intrude upon your time in detailing them. A further point that is well to remember, as a reason why tests should be

made in all cases, is that, "Close blood relations hemolize as often as those not related" (Percy).

While the idea of the introduction of the anticoagulent in blood transfusion is not a new one, its practical application has only been recently accomplished. Still I feel there is much more to be accomplished before the method will be perfect. I do not like the passage of the blood through a tube, long or short, and then down the sides of the graduate, finally reaching the sodium citrate solution in its bottom, the constant stirring of the solution, the transference to the Salvarsan outfit and thence through a long rubber tube, with more or less delay, into the recipient. Lewisohn advises the introduction first of 20 to 30 c. c. of the solution by the gravity method. Then he suggests waiting ten to twenty minutes before administering the remaining portion, to see if any anaphylactic development has taken place. If no reaction develops, the remainder is administered.

The above technic is the one in vogue in transfusions for acute anemia, pernicious enemia, etc., and is the one I have followed in the use of this method. However, in the future I am going to use a combination of the Linderman and Lewisohn methods, drawing the blood first into a 20 c. c. syringe containing 2 c. c. of a 2 per cent. sodium citrate solution. This will make, when the syringe is filled, a 0.2 % citrated blood solution. Inject this into the vein of the recipient and wait ten to fifteen minutes for developments. There being no anaphylactic action, draw off two 200 c. c. syringefuls of blood with the requisite amount of sodium citrate solution in them, and inject through a smaller needle into the recipient at your pleasure. After the first 200 c. c. syringe is administered, it may be disconnected from the needle and the second syringe attached and delivered through the same needle. The syringes with the citrated blood can be kept stored at almost any temperature, (on ice) transported any reasonable distance and used at the pleasure of the physician. By this method you would do away with the possible change in the blood from contact with air, with the graduate, the rod, the gravity outfit with its long tubing, and have instead a method requiring three syringes with two needles. In fact, it can be done with two syringes. This method actually brings the blood transfusion down to the plane of intravenous-hypodermic medication, the ideal.

I submit the idea to the Association for its consideration, and promise further reports on it when I have had enough cases and sufficient application of the method to justify it.

DISCUSSION

Dr. J. S. Wilkins, Paducah, Tex.—There are a few little points, I think, that will facilitate the method which Dr. Newell has described very much. First, a tourniquet is applied above the elbow in order to make the vessel that is to be used stand out very prominently, then a small straight needle is passed through the skin into the outer coast of the vein, thus transfixing the vein, which will permit one to enter the vessel of the donor with a much larger needle, which is very important in preventing coagulation, as it has been demonstrated that if the blood flows freely and rapidly from the donor you are much less apt to have coagulation. I think that this is important and will be appreciated by one who employs transfusion.

The Doctor's method implied that it was relatively safe and as the title of his paper is "Blood Transfusion in Emergency Surgery," I was interested in hearing what method, if any, he employed in the selection of a donor. He spoke as if he would be willing to use almost any one as a donor, and that there was very little danger from the reaction, but my experience has taught me to be very careful, for I have seen very severe reactions, and even death, occurring on the table where transfusions were being done by very competent men. So that I would say that unless I knew my patient was in imminent danger of immediate death from the loss of blood I would much prefer having a hemolysis test made in every case, and where possible homogenous blood would be used.

I have seen beautiful results from transfusion in hemorrhages occurring in typhoid fever. It is sometimes a life-saving measure for this condition. Also, it has been used with very gratifying results in hemophiliacs. It has been known to stop the bleeding instanter and to assist in bringing about permanent relief from this condition.

I think the method described by the doctor is far superior and much more simple than the Percy, the direct, or any other method that I know of, because of its simplicity.

Dr. Jere L. Crook, Jackson, Tenn.—I also was at Chicago and saw some interesting work done there; and one interesting reel before the Congress of Surgeons illustrated this paper in its simplicity, and it was endorsed by many men. I believe the method he advocates—handling two or three large syringes—will be much simpler than the one shown this morning. For the last three or four years we have had four syringes. Many now give Neo-Salvarsan with a small

syringe, which makes it a very simple matter, indeed. This method of putting in the citrate solution, then injecting it into the vein of the one who needs it, reduces it to its simplest terms.

It is not necessary to use blood, in the vast majority of cases of shock from sudden hemorrhage, in railway surgery. We know that many of us in past years have saved many lives by normal salt solution injected into the veins or even under the skin or into the rectum, where we had time.

In traumatic surgery we need a citrate medium. The patient is dying because there is not enough blood current to carry the volume through the vessels, and the water will stop, just as in a creek bed, because it is soaked up by the sand, but if you will take a little pipe and spray more water, you will get a little current and a patient will get well with a blood transfusion.

Now the prime object of transfusion is, where we have plenty of time to examine both the donor and the recipient, but in railway surgery, emergency surgery, we accomplish practically everything with the normal salt solution that we are going to accomplish with blood. It is much easier to have normal salt solution than it is blood, and I do not think we can get away from that most wonderful and valuable agent in the treatment of shock, especially shock from hemorrhage. While I recognize it to be true that this is a new thing and a great contribution, and the simplicity of this method puts it into the hands of all of us, at the same time we should not forget that we have accomplished the same thing with normal salt solution.

Dr. Jere L. Crook, Jackson, Tenn.—Speaking of ectopic gestation, I had, three nights ago, such a case, where the patient was so near dead when we operated upon her at 3 o'clock in the night that she was almost gone. We filled the abdomen with normal salt solution and she revived. That woman's life was saved by a combination of prompt action in clamping the tube and by an infusion of salt solution.

Dr. Newell (closing).—One of the gentlemen spoke of transfixing the vein with a needle in drawing the blood. That is a good idea. I have seen that suggested, in the *Annals of Surgery*, by a man from Augusta, Ga. Instead of using the tourniquet, if you will put on a blood pressure outfit and keep it between 60 and 80 and let the patient close and open the hand, you will get a better distention than by putting on a towel, etc.

Now, I said to the doctor over here that there was considerable danger in all transfusions without making the tests, and only in dire distress would I recommend transfusing blood without making the proper laboratory tests.

In regard to what Dr. Crook says about the infusion of saline solution, we have been using that, too, and it has stood us in good stead. It would only be a question of gravity of the case with me whether I would use hyperdermoclysis, saline solution in the vein, or a blood transfusion.

In the majority of cases he is right about the use of saline, but there are all kinds of emergencies, ectopics, etc., in which saline solution would not be efficacious. You not only want volume, but substance, and you can only get the latter by blood transfusion.

AUTHORS' ABSTRACTS

Surgery

The Mucosa of the Rectum and Sigmoid Colon as a Focus of Infection. Horace W. Soper, St. Louis, Mo. The Boston Medical and Surgical Journal, Vol. CLXXVI, No. 22, May 31, 1917.

The mucosa of the rectum and sigmoid is often invaded by pyogenic micro-organisms, resulting in an inflammatory process which acts as a focus of infection.

Fifty cases were studied, varying in intensity from mild non-ulcerative infections of the ampulla recti to severe ulcerative processes involving the entire rectum and a part of the sigmoid colon.

The infection is mixed in character and exhibits an extreme degree of chronicity. The resulting systemic disease varies from merely nervous disturbances, headaches and constipation to pus infection of the appendix and gall-bladder, gastric ulcer, arthritis deformans, and chronic kidney disease.

Treatment by dry powder insufflation is extremely efficacious. Calomel is the powder of choice for local use, as it adheres well to the mucosa and can not be easily dislodged. It is non-irritant and may be applied to the sensitive mucosa of the anal canal without producing pain. There is no danger from absorption.

In the search for foci of infection, the lower bowel must not be neglected. In fact, no general examination of a patient is complete without proctosigmoidoscopy.

Complete vs. Incomplete Hysterectomy. E. L. King, New Orleans, La. New Orleans Medical and Surgical Journal, Vol. 69, No. 12, June, 1917, p. 820.

The author has observed a number of cases of malignancy developing after supravaginal hysterectomy for tumor, and also several cases of annoying leucorrhea after this operation for pelvic infection. The average malignancy complicating fibroids is 4%, with a higher percentage in women over forty.

The arguments in favor of supravaginal hysterectomy may be summarized as follows: (1) lower mortality and morbidity rate; (2) simpler technique; and (3) better support of the vagina and pelvic floor. It is, as a rule, better and safer; but the author prefers complete hysterectomy for selected cases.

The technique used in Miller's clinic at the Charity Hospital is practically that of Crossen. After preliminary vaginal iodinization (or curettage) the operation proceeds as in supravaginal hysterectomy. The bladder is dissected down and laterally until the vagina is exposed below the cervix. This is determined by tapping the vagina or by catching it between the fingers. The anterior vaginal wall is opened, the cervix caught and pulled upward, the vagina is clamped and cut

from before backward; a gauze pack is placed in the vagina, over which the vagina is partly (for drainage) or completely sutured. Gloves and instruments are changed and the operation completed as usual. Careful asepsis and hemostasis hasten the convalescence.

The author concludes that, with an operator sufficiently skilled in pelvic surgery, and with general and local conditions favorable, complete hysterectomy is indicated in (1) fibroids with badly diseased cervices; (2) easy fibroids, where the added risk is slight; (3) severe chronic infections, especially Neisserian (warmly advocated by Dudley); and (4) occasionally for vaginal drainage.

Transplantation of Fat, Fascia and Living Tissue in Surgery: A Report of Experiences in Various Conditions. Allen B. Kanavel, Chicago, Ill. The Journal of the Missouri State Medical Association, Vol. XIV, No. 8, August, 1917, p. 333.

The author gave his experience with the transplantation of fat, fascia and living tissue in various surgical procedures, covering transplantation of fat to prevent the formation of adhesions about tendons, about nerves, and in joints; in the treatment of contracted hands, suture of the nerves, and of various deformities of the forearm and other parts of the body. He discussed the uses of fascia in repairing hernias and congenital defects such as spina bifida, etc. In general he found the transplantation of fat most successful where it had good living tissue around it. It was not particularly successful in osteomyelitis nor in large scars, but its use in breast cases, about tendons, nerves and in small scars was most successful.

Clinical Observations on Mammary Neoplasms. J. Garland Sherrill, Louisville, Ky. International Journal of Surgery, Vol. 30, No. 7, July, 1917, p. 226.

Sherrill believes the subject of mammary neoplasms is worthy of careful consideration at this time for two especial reasons: (1) to urge upon the profession the necessity of a campaign for education of the public so that these patients may promptly come under skillful surgical care; and (2) to emphasize the fact that the diagnosis of breast cancer in the early stages is by no means work, and consultation with an expert is most desirable in perfecting the diagnosis. Some cases easy even to those most experienced in such are so puzzling that a final conclusion can only be reached after a pathological report has been added to the clinical and operative findings. The pathologic classification of MacCarty is important should it prove to be true. About 80 % of mammary neoplasms are malignant.

The author discusses many of the important points in differential diagnosis between benign and malignant mammary neoplasms, and outlines the technique he employs in conservative and radical operative procedures. Several illustrative cases are cited. Radical measures are advised in all certainty or suspiciously malignant neoplasms.

Four factors operate to cause delay in application for surgical aid: (1) the neoplasm may not be discovered; (2) timidity and ignorance of the patient; (3) inattention on the part of the physician first consulted; and (4) the erroneous impression that cancer is hopeless.

In recapitulation the author emphasizes the importance of the following points:

1. The proper education of the public concerning mammary neoplasms;
2. Careful examination of the patient, and when in doubt insistence upon expert consultation;
3. Radical operation as the best method of treatment, followed or preceded by Roentgenotherapy ;and
4. Pathological examination at the time if doubtful of the diagnosis, and complete removal if malignancy is shown.

Blood Transfusion in the Anemias. Marvin L. Graves, Galveston, Tex. Texas State Journal of Medicine, Vol. XIII, No. 4, August, 1917, p. 137.

Transfusion of blood has been frequently attempted. Richard Lower, English physiologist, "was the first to perform direct transfusion of blood from one animal to another, 1665, and in 1667, Denys, a French physician, first transfused man." Direct transfusion by Crile through silver or aluminum tubes was given thorough trial, but was found to be tedious, difficult, did not permit measurement of blood, and frequently failed. Indirect method of Percy of whole blood is quite successful, but subject to objection of too much surgery, destruction of veins and requires too much surgical retinue. Lindeman's method of direct transfusion of whole blood without anti-coagulant, by means of a series of syringes rapidly cleansed in normal saline, permits use of veins again and is very successful, but requires elaborate and careful technique and surgical retinue. Experiments of Weil and Lewisohn established the value of whole blood with physiological anti-coagulant. Experiments of Lewisohn in animals and human beings proved that. Two-tenths to twenty-five hundredths per cent. solution of sodium citrate mixed with whole blood administered **ad lib** with insignificant results. Procedure easy, non-surgical, safe, permits unlimited quantities of blood at the smallest expenditure of time and technique. Author uses 25 % solution sodium citrate, c. p. of highest purity, made by Merck or other reliable manufacturer. Uses this percentage because found to be absolutely certain, safe and non-toxic.

Reactions follow all methods of injection, run the gamut of chill, nausea, vomiting, epigastric pain and distress, general aching, headache, fever 102, 104, 105; sometimes dyspnea, flushes, superficial hemorrhages, followed by appearance of urobilin in stool and urine. Most reactions quite mild, represented by temperature of 99½, slight aching sensations. Ten per cent. of cases show reactions in practically all methods. These reactions due to hemolysis, perhaps in certain cases to protein intoxication. Suggested by Landois (1875) that human blood corpuscles are hemolyzed in animal serum, and Eisenberg and others

(Continued on page 163)

EYE, EAR, NOSE AND THROAT

LATE INFECTION AFTER ELLIOT OPERATION NOT ALWAYS FATAL*

By M. Feingold, M.D.,
New Orleans, La.

With the advent of the different operations upon the sclera for the relief of glaucoma, and of the Elliott operation especially, two things became apparent after brief experience and seem to be true even now: (1) The operations produce undoubted relief from the symptoms and they arrest the process in a large number of cases hitherto not amenable to treatment. (2) The eyes so operated upon show a great liability to secondary infection and thereby to final destruction of the sight. This danger of losing an eye, long after an operation, by an infection occasioned by the nature of the operation, so largely loomed in the mind of some of us as to dampen the enthusiasm and to raise a warning against too promiscuous operating. All these fears, largely based upon theoretical deductions, were soon realized and reports of secondary infection began to appear in such alarming numbers that one had to fear that with advancing time each eye so operated upon would be liable to be affected and lost in this manner.

It was, therefore, a pleasant surprise to meet with at least one instance in which the eye finally emerged from the ordeal of a typical late infection with vision and structures unharmed, and it is for the purpose of instilling new hope that attention is drawn to the fact by the following case reports:

CASE REPORTS

Mrs. B. R. called at the Outpatient Department, Charity Hospital, for the first time ten years ago, when 45 years old, on account of the sight of the right eye being blurred and because she could hardly see when the right one was covered. Diagnosis of simple glaucoma of each eye was then made (record not available). The left eye saw hand movements in the temporal field only and the patient was repeatedly used for class demonstration of the typical glaucomatous field. The tension of the right eye was kept within safe limits by the use of eserin and the sight remained good in spite of a large glaucomatous excavation. Gradually the left eye became entirely blind and vision of the right eye diminished to 5/9 and the tension no longer could be controlled by the miotic. For this reason an Elliot operation was performed upon the right eye at the Touro Infirmary July 20, 1915, 2 mm. trephine, complete iridectomy. At her discharge from the Hospital the eye showed a small posterior synechia at the nasal pupillary margin and a glassy edematous cushion at the upper limbus with T —. Vision and tension remained good for some time. April 15, 1917, after several nights spent at the bedside of her dying husband, severe pain in the right eye and swelling of the lids suddenly developed. The eye presented the typical picture of panophthalmitis with marked chemosis of the conjunctiva and yellowish pus in the anterior chamber extending downward from the bleb; the sight was diminished to light perception. Prognosis was pronounced very grave and mercury, iodid of potash, aspirin and hot applications were ordered. Bacteriological examination could not be obtained. During the next four or five days the symptoms gradually abated, the pus cleared away and the patient began to distinguish objects. On June 16, 1917, vision was again 5/9, media were perfectly clear, and no change in the fundus could be found; scar was flat, more dense and opaque. T + 1.

The following case shows a similar outcome of a late infection as far as the structures of the eyes are concerned and would have undoubtedly shown no deterioration of vision had the eye not been blind before.

G. M., aged 39 years, driver, called at the Outpatient Department, Touro Infirmary, February 6, 1913, saying that two years ago the sight of the left eye began failing; saw halos around light; for one year left eye entirely blind. Right eye 5/5; medullated nerve fibers at the lower margin of the disc; small, flat, physiological excavation; T + 1. Left eye: no light perception; total overhanging excavation; T + 2. Wassermann negative. October 13, 1913, Elliot operation on left eye: 2 mm. trephine, complete iridectomy. At discharge from Hospital: small, glassy, filtering bleb at upper limbus. Did not report until January 13, 1916, when condition appeared unchanged. October 2, 1916, he called again, stating that both eyes had been inflamed for a few days and the left one especially painful. Right eye: Acute conjunctivitis. Left eye: ½ mm. hypopyon in the lower angle of the anterior chamber; no view of fundus. Smears from the eye were negative and the culture made

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

*From the Departments of Ophthalmology, School of Medicine, Tulane University, and Charity Hospital of New Orleans, and from the Department of Ophthalmology, Touro Infirmary, New Orleans.

on that day was reported a few days later to contain B. coli and Staphylococcus albus. Was urged to remain in the Hospital, but declining, was given mercury, iodid of potassium and aspirin. Did not report until one week later, when hypopyon was entirely gone and the cloudiness of the media had greatly diminished. During the further observation the media became perfectly clear and the fundus could again be inspected in detail. No visible fundus changes. The scar at the upper limbus is now more dense, though still prominent. T +.

A closer study of the literature on the subject brought to light similar instances in the experience of others and it might be of interest to see how often this fortunate ending came about.

In spite of the rather numerous instances of late infection reported, a tabulation of these cases is rather difficult because a good many of the cases are mentioned in discussions at meetings. Exact details of the outcome are thus often missing in the reports published and it is at other times impossible to know whether to class a certain case as a loss or a cure. The cases in which the result can be classified with any degree of certainty are comparatively few in number and only these are incorporated in the following tables which contain cases of late infection following all forms of scleral operations for glaucoma. As "cured" are classed below all the cases when the result is called "cure," "iritis," "diminished vision." "Loss" is understood when the outcome is mentioned as "enucleation," "phthisis bulbi," "panophthalmitis," "poor outlook."

Cures	No. of Cases
Axenfeld	1
Broder	1
Bronner	2
Brown	1
Butler	4
Cramer	1
Crouch and Clapp	1
Guglianetti	1
Herzau	2
Kuhnt	1
Knapp	2
Lundsgard	2
Meller	1
Pagenstecher	1
Stoewer	1
Feingold	2
	24

Loss	No. of Cases
Axenfeld	1
Bronner	1
Butler	4
Clegg	1
Constantinecou	1
Gifford	1
Greene	1
Griffith	1
Harms	1
Isakowitz	1
Meller	7
Paul	1
Percival	1
Quackenboss	1
Schur	1
Priestley Smith and Norman Pike	1
Stock	2
Story	1
Vossius	2
Wagenmann	1
	31

Incomplete as these figures are, they teach us the one lesson quite forcibly that late infection after sclerectomy, as dreadful a sequel as it forms, need not always end fatally to the eye. At the same time it must be remembered that these figures are incomplete and that the percentage of cures, if calculated from the above figures, would undoubtedly appear higher than would be the case if we had complete data about all cases reported. No attempt at calculating the probability of cure has, therefore, been attempted. This can only be done when more details will be available.

The two cases reported, as well as several instances in the literature, seem to indicate that late infection will have a tendency to make the scar more firm and thereby a return of the increased tension probable.

The data on hand at the present time are entirely insufficient to permit any deductions what role the different micro-organisms play in late infections. All we can do now is to surmise that different micro-organisms are probably responsible for the different forms of late infection. That such varieties of the disease exist is evident from the different end-results of the different cases of late infection.

It may be pardonable to hope that the study of the micro-organisms concerned in late infection will result in increasing the facilities for cures. In the meantime it will be well to bear in mind the suggestions that have been made on different sides that we should direct our efforts toward making a thick conjunctival flap and thereby lessen the chances of a late infection.

BIBLIOGRAPHY

Axenfeld: Klin. Monatsbl. f. Augenh., Vol. 51, June, 1913, p. 816; Klin. Monatsbl. f. Augenh., Vol. 54, 1915, p. 264.
Broder: Medical Record, Vol. 90, p. 73.
Bronner: Klin. Monatsbl. f. Augenh., Vol. 54, Sept., 1913, p. 404.
Brown: Journal A. M. A., Vol. 63, p. 225.
Butler: Ophthalmoscope, Vo. 12, 1914, p. 329; Arch. of Opth., Vol. 44, 1915, p. 611.
Clegg: Ophthalmoscope, Vol. 12, 1914, p. 470.
Constantinescu: Ophthalmoscope, Vol. 12, 1914, p. 624. (Clin. Ophth. Dec. 10, 1913, p. 38; Klin. Monatsbl. f. Augenh., Vol. 52, p. 602.)
Cramer: Klin. Monatsbl. f. Augenh., Vol. 51, Dec., 1913, p. 771.
Crouch & Clapp: Ophthalmic Record, Vol. 24, 1915, p. 501.
Gifford: Ophthalmic Record, Vol. 23, 1914, p. 1.
Greene: Ophthalmoscope, Vol. 12, 1914, p. 470.

Griffith: British Med. Journal, Aug. 29, 1914, p. 387.
Guglianetti: Archiv. di Ott., Vol. 21, p. 633.
Harms: Klin. Monatsbl. f. Augenh., Vol. 51, Sept., 1913, p. 380.
Herzau: Klin. Monatsbl. f. Augenh., Vol. 51, Dec., 1913, p. 773.
Isakowitz: Klin. Monatsbl. f. Augenh., Vol. 51, June, 1913, p. 814.
Knapp: Arch. of Ophth., Vol. 43, 1914, p. 121.
Kuhnt: Zeitsch. f. Augenh., Vol. 30, 1913, p. 137.
Lunsgard: Klin. Monatsbl. f. Augenh., Vol. 54, 1915, p. 209.
Meller: Klin. Monatsbl. f. Augenh., Vol. 52, 1914, p. 1.
Pagenstecher: Klin. Monatsbl. f. Augenh., Vol. 51, Sept., 1913, p. 404.
Paul: Klin. Monatsbl. f. Augenh., Vol. 52, 1914, p. 701.
Percival: Ophthalmoscope, Vol. 12, 1914, p. 2.
Quackenboss: Arch. of Ophth., Vol. 43, 1914, p. 600.
Schur: Klin. Monatsbl. f. Augenh., Vol. 51, Sept., 1913, p. 377.
Stoewer: Klin. Monatsbl. f. Augenh., Vol. 53, 1914, p. 425.
Stock: Klin. Monatsbl. f. Augenh., Vol. 51, Sept., 1913, p. 402.
Story: Klin. Monatsbl. f. Augenh., Vol. 51, Sept., 1913, p. 403.
Priestley Smith & Norman Pike: Ophthalmoscope, Vol. 12, 1914, p. 2.
Vossius: Klin. Monatsbl. f. Augenh., Vol. 53, 1914, p. 222.
Wagenmann: Ophthal. Gesellsch. Heidelberg, 1913, p. 211.

TESTS BY THE BARANAY METHOD*

By John J. Shea, M.D.,
Memphis, Tenn.

Robert Baranay, of Vienna, won the Nobel prize by his extensive demonstration of the relation to clinical medicine of the vestibular tests. But to a group of Americans belongs the credit for bringing the work out of chaos and clarifying it so that a man of ordinary brains may understand the subject and apply it to his work. This group is composed of Drs. Jones, Fisher, Randall, Mills, Weisenburg and Brumm, of the University of Pennsylvani, and Major Eugene Lewis, M.R.C., U. S.A.

As a disciple of the Neuro-otological Department of the University, I wish to present to the Section for consideration their teachings.

ANATOMY

The labyrinth is as a rule looked upon by the medical profession as something beyond the conception of a human mind, but if you forget all you have tried to remember about it, and consider it as three canals and two reservoirs containing a fluid capable of being set in motion and supplied with nerves of a special sense ability, you will have a working basis of the anatomy. The horizontal canal is in the horizontal plane of space and the remaining two are in the vertical plane set at right angles to each other. This arrangement presumes that the head is held in the proper position, which is 30° lower than the usual position. The eighth cranial nerve is divided into two branches, the cochlear and the vestibular, and from the latter are derived the nerve fibres to the labyrinth. "The fibres from the horizontal semicircular canal pass through the eighth nerve to the brain stem and enter Deiter's nucleus in the medulla oblongata. At this nucleus the fibres divide, going on the one hand to the posterior longitudinal bundle, through which they are connected with the various eye muscle nuclei, to be distributed through the third, fourth and sixth nerves to the eye muscles themselves. It is this pathway that is responsible for the eye movement. The other pathway goes from Deiter's nucleus through the inferior cerebellar peduncle to the cerrebellar nuclei of the same side, from which it proceeds through the right superior cerebellar peduncle to the decussation of the two superior cerebellar peduncles in the base of the cerebral crura; from this point there are two pathways to the cerebral cortex of both sides, but the main pathway goes to the cortex of the opposite side. The cortical centres that receive these fibres are postulated by Mills to be in the posterior portion of the second temporal convolutions adjacent to the cortical areas for hearing. It is this pathway from the horizontal canal to the cerebral cortex, passing through the cerebellum, that is responsible for the production of vertigo on ear stimulation. The fibres from the vertical semicircular canals have a different pathway after entering the brain-stem, ascending in the pons to a point above the middle of the pons. At this point the fibres divide, on the one hand going to the posterior longitudinal bundle, to be distributed to the eye muscles; on the other hand the fibres enter the cerebellar nuclei through the middle cerebellar peduncle, from which point their pathway is the same as that of the fibres from the horizontal canal. In a nutshell, by the vestibular apparatus we

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

mean the static portions of the internal ears, and the pathways from the ears through the brain stem, cerebellum and cerebrum. The nerves from the horizontal canal ascend through the medulla in a different path from the combined fibres of the two vertical canals."—(Drs. Jones and Fisher.) The principal differences are that their courses differ after entering the medulla and likewise their entrance into the cerebellum is through different pathways.

PHYSIOLOGY

When the fluid in the canals has been set in motion either by rotation of the body or by the "thermosyphon" action of change of temperature of the fluid, it will move the cilia processes of the contained nerve fibres which will send a stimulus to the brain. The brain has learned to interpret this in such a manner as to recognize what change of position has occurred and the present position of the head. This ability of orientation we now consider as a special sense and in conjunction with the knowledge obtained from vision and muscle sense it composes the system of equilibrium. Two reactions occur because of these stimulations, a definite movement of the eyes and the sensation of vertigo. We can see the former, but must rely upon the statement of the patient for the latter or else measure it by the two phenomena produced (past-pointing or falling).

The movements of the eyes are called nystagmus and consist of two parts, a slow movement which is always in the direction of the endolymph flow and a rapid movement jerking the eyes back from their newly acquired position. There have been some unnecessary complications attached to these movements by misnaming them in their early work. The slow movement is caused by the flow of the lymph and is the real nystagmus, while the rapid movement is only an attempt upon the part of the cerebrum to correct the disturbed ocular position. The other reaction, vertigo, is in the opposite direction from the flow. Hence when the patient attempts to point he presumes that he has moved in a direction opposite from that of the endolymph flow and in his endeavor to touch the point correctly, will pass beyond the point and this direction coincides with the endolymph flow. Two general rules are all one has to remember of the physiology of the labyrinth reactions:

1. The slow movements of the eyes and the past-pointing are in the direction of the endolymph flow.

2. The sensation of vertigo is in the opposite direction to the endolymph flow.

TESTS

A thorough examination of the nose, throat, tonsils and sinuses is made and recorded for further use in the consideration of any pathology afterward located. The usual ear tests are made to determine the condition of the vestibular branch of the eighth nerve. In order to determine the condition of the labyrinth system as a unit we have the rotation tests; and in order to test each canal separately, we have the caloric or douching tests. We first determine if there is any spontaneous nystagmus or if it may be produced by the changing of the position of the eyes. This is best made by having the patient fix his vision on a distant object and turning him first to the left (eyes go to the right) then to the right. Next, while retaining the position of the head, have him look up as high as he can and then down at the floor in front of him. The rotation test is made by placing the patient in the Pennsylvania chair, adjusting his head properly (30° incline forward) and having him close his eyes. Then the patient is turned to the right ten times in twenty seconds and brought to a stop. He is commanded to open his eyes and fix his vision on a distant object, still retaining the correct position of the head. A stop-watch is the only reliable means of timing the duration of the nystagmus. We observe the slow component and the fast component, as likewise their amplitude. The patient is turned in the opposite direction ten times in twenty seconds and the same observations made. The correct number of seconds for the nystagmus is twenty-six seconds. Next the patient is demonstrated the proper way to test the touching and his spontaneous touching is recorded.

With the eyes closed the patient is turned to the right ten times in as many

seconds, which is twice the rate of the previous turning, and brought to a fixed stop. His touching is rapidly tested, first his right, then his left, and back and forth until he touches with both hands. These are recorded in inches to the right or left, as he missed to the right or to the left. The tests are again repeated after he is turned in the opposite direction.

The douching tests are made by having the patient sit in the chair with the head in the proper position and the ears are irrigated with water at 68° F. With the stop-watch the time is estimated from the beginning of the flow until the first twitch occurs. This is noted as the time necessary for the production of the nystagmus and should be 40 seconds. We allow the water to flow a while longer in order that the labyrinth may be thoroughly cooled. A notation of the character of the nystagmus is made and the patient told to close his eyes. His touching is again tested, noting the direction and distance of his miss. These tests are for the vertical canals.

The position of the patient's head is changed so that the horizontal canals may come into the vertical planes and this is obtained by having the patient's head held 60° backward. The nystagmus is noted as to direction and amplitude. He is again told to close his eyes and the past-pointing tested of the horizontal canals. When the horizontal canals cause the nystagmus the directions of the movements are in the same plane of space as the canals at present are in; that is, when the canals are horizontal they are in the horizontal, and when the canals are in the vertical plane they are from side to side.

INTERPRETATION OF THE REACTIONS

The interpretation of the reactions requires a consideration of all the possibilities that may produce such a deviation from the normal and necessitate experience and an analytical mind. But certain little rules may be used to help the beginner.—(Drs. Jones and Fisher.)

1. Peripheral Lesions.

(a) An impairment of the function of both the auditory and vestibular branches. If this impairment is proportional it is the more decisive.

(b) Tinnitus. History of presence.

(c) Proportional impairment of the responses from both the horizontal and vertical canals.

(d) Proportional impairment of vertigo and nystagmus.

2. Central Lesions.

(a) A normal cochlear, but impaired or non-responsive semicircular canal.

(b) Normal response from horizontal, but not from vertical canals, or vice versa.

(c) Normal nystagmus, but impaired vertigo from the same canal, or vice versa.

(d) Normal vertigo and nystagmus from the same canal, but impaired past-pointing in any direction of an extremity.

(e) Spontaneous vertical nystagmus is pathognomonic of brain-stem lesion.

APPLICATION OF THE TESTS

1. To the general practitioner these tests are a means of determining the cause of his patient's vertigo. He may have the same confidence to continue treatment along a definite line after the tests have made a diagnosis of functional or organic vertigo just as he has to carry on strenuous anti-syphilitic treatment after a positive Wassermann. It is a great satisfaction to tell a patient suffering from vertigo that you are sure that he is not afflicted with a brain tumor or any other serious nervous disease, but that he is only disturbed because of some circulating toxin.

2. How often after testing the patient with the forks, Gauton whistle and the whispered voice you are unable to tell him definitely whether or not he has a nerve deafness or only a chronic salpingitis of the Eustachian tubes? In these cases a simple appliance of the turning tests alone or the complete tests will give you data of sufficient security to tell the patient whether or not his vestibular nerve is involved. Because we can locate an involvement of the end-organ and the vestibular branch of the eighth nerve and the neurologists tell us that a peripheral neuritis is not liable to select a branch of a peripheral nerve, but rather include the entire nerve. But still more important in clearing up the diagnosis are the tests after a mastoid operation, when the

complex of symptoms points to a brain abscess or suppurative labyrinthitis.

3. Sometimes before the Wassermann test has developed, by a careful comparison of the daily tests we are able to diagnose the syphilitic character of a lesion. For in the early days of the infection we have a consistent shortening of the vestibular reactions. In the early meta-syphilitic conditions we also have a valuable means at our disposal of apprehending nerve degeneration by testing the nerve pathways involved in these reactions.

4. The eye man may use the nystagmus movements to determine the nerve control of the endolymph in the right horizontal recently a young girl, aged three, who, after a decompression operation for fracture of the vault of the skull, presented an internal strabismus of the eye of the same side. I was able by douching with cold water the ear of the same side to test the nerve supply of the external rectus. It failed to be drawn to the right while the eye of the opposite side came over to the right. This satisfied me that she had a paralysis of the sixth nerve. As time passed by, a repetition of the tests showed the returning enervation to the muscle until finally the right eye would move to the right upon producing a flow of the eye muscles. For instance, I had canal to the right.

5. A proper conception of the tests and their scope is indispensible to a modern neurologist. For here he has a means of determining whether a lesion is intracranial or peripheral. Also he is able definitely to localize lesions in the medulla, pons, cerebellum and cerebrum by tracing these nerve impulses through the various nerve tracts traveled by the impulses either as efferent or afferent. He is able to ascertain the cause for the patient's staggering and as applies to the ear tests, it gives him a solid foundation upon which to build his opinion.

6. Last but not least is the part these tests are playing in the selection of the "bird-men." When a man is in the air he depends upon his equilibrium sense to steady his machine and prevent accidents. This sense being derived from a combination of the impressions obtained from his sight, muscle-sense and labyrinth, we find that when he is up in the clouds, the first two are of very little or no value to him and upon the third he is wholly dependable. So before the "would-be aviator" is accepted, we test very carefully his labyrinth and its nerve tracts. If he is subnormal we make sure there is no loss of this new sense before he is accepted, or in the face of a serious disturbance of it we flatly reject him. America was first to test her bird-men thusly, but now a commission is going over to establish these same units in the schools of the Allies.

CONCLUSION

America has a right to be proud of the University of Pennsylvania for harboring a group capable of such work upon so complicated a subject; and it is my advice to all members who can take leave of their practice to journey to the University and take the course in Neuro-otology.

I wish to express my thanks to Drs. Jones and Fisher for their teachings and their permission to present this new work.

DISCUSSION

Dr. W. Likely Simpson, Memphis, Tenn.—The equilibrium tests which we give our embryo aviators were only made possible by the discovery of Baranay, and I feel very proud of the Russian who took as a prisoner Baranay, but I am glad to say he has been exchanged and is now in Sweden. I am sorry that we can not have with us today both I. Jones and Baranay. All credit should be given Jones and Fisher for working out the different nystagmic and equilibrium fibres, but I do wish we could hear Baranay and have him tell of his late findings.

In discussing the equilibrium tests, there are some points which might be of interest. For instance, in making the falling test, it is well to be on the side of the chair to which the candidate normally falls. A few evenings ago I saw a moving picture of the equilibrium tests and the examiner was on the wrong side. On turning to the right, the examiner should stand on the right, and on the left when turning to the left, or, if one turns the chair correctly, and just far enough, one need not change the position of standing at all. It is well to be in a position to catch the candidate if he has a very marked falling reaction. Some few minor accidents have occurred. If the candidate has a very marked falling reaction, it is well to have him open his eyes at once.

Another point is that our instructions to one being examined should be very definite. The eyes must be kept closed during the whole pointing test. The location of the finger must be kept in mind by the candidate at the time, and the movement of the arm must be a gradual, moderately slow, up and down movement.

Dr. J. B. Greene, Asheville, N. C.—I want to ask a question. Dr. Shea spoke of the importance of the turning test in diagnosing an internal ear lesion in acute otitis media from a brain lesion. It seems to me that the trauma produced in the turning test, if there be acute labyrinthitis present, may tend to cause a brain lesion (meningitis). I mention this because Duel, of New York, recently warned us against the turning test in suspected acute internal ear trouble. This caution seems wise from a theoretical standpoint. He (Duel) advises the irrigation test in these cases, and I should like to ask Dr. Shea whether or not the irrigation test with cold water may not be sufficient in such cases for diagnostic purposes?

Dr. John Franklin Rowland, Hot Springs, Ark.—I want to thank Dr. Shea for his clear, concise explanation of this test. In a very brief speech, he has given us a clear conception of the test, and of the anatomy and pathology covered by it. Those of you who were present at the meeting of the American Medical Association in New York saw the Vitagraph pictures demonstrated by Mr. Isaac H. Jones before the Section on Oto-Laryngology and got a pretty good insight into this work, and those of you who took this work under Barany, Bondy, Ruttin and Beck, of Vienna, readily see the advantage this American Model Nystagmus Chair has over the Vienna Model, which they used. It demonstrates very conclusively to my mind the predominance of the American inventive genius. You cannot obtain accurate results from the Vienna chair, because it does not tilt the head thirty degrees forward. I first used the Vienna model, but later exchanged it for this kind; in a few sceonds, with this test, you have a pretty clear conception of the condition of the patient's central nervous system, as well as the condition of his equilibrium. You saw from the first applicant used in the demonstration by Dr. Shea, that after turning him to the right ten times, you had a good idea whether he was a fit subject for the Aviation work, and if you are not satisfied with the results obtained from the turning method, you may use the caloric test, which is more delicate, and better results can be had.

Dr. Shea did not speak of the conditions that may modify the result of the caloric test. Cerumen in the external auditory canal, a congested thickened drum membrane, may cause the nystagmus to take twice as long to appear as it would otherwise. Dr. Beck demonstrated that point before the clinic in Vienna by swabbing the drum membrane with adrenalin chlorid, the nystagmus appeared within twenty seconds instead of forty.

Now, Mr. Chairman, this test helps the otologist to be of valuable service to the neurologist and syphilographer in arriving at a diagnosis of diseases in the central nervous system, and in the diagnosis of syphilis. You take this in conjunction with the Rienne, Schwabach and Weber tests, and I think you have a better way in which to diagnose syphilis than you have in the Wassermann test.

Dr. Shea (closing).—I think that I did not make it clear in regard to aviation. We do not turn a man down because he is not one hundred per cent. perfect. It is not fair to do that. We turn him down if there is a disproportion between the two sides. He can have a little imperfection on both sides, but if he has it on only one he loses his balance. Why? If you think of the one labyrinth's sending impulses to the brain that are not in proportion to those of the other, you will see that there is a tendency to go like a vehicle when the front wheels are out of line. The man may go out to thirty-six seconds nystagmus on both sides, or even miss one in three or both when when pointing. The boys are so patriotic and want to get in so badly that they try too hard. We have to tell them to quit trying and be natural. We have to say: "You are registering a difference in your position. We want you to register what your brain tells you is the change in your position, and not the real position." Do not say: "Touch the finger," but "Register what you think is your position."

When douching patients in bed, they are in the best position for this test. You test the horizontal canal first. Just have them lie down with no pillow under their head and you have them in the right position—60 degrees back; and if you want to test the vertical, have them held up straight. Bedside irrigation can be done readily. The greatest thing is the interpretation. You have to take into consideration everything that you find, the anatomy, physiology, etc., and balance them up; and then decide what you think would fit their condition best. Try to make it the simplest thing. Remember that the law of probabilities is the greatest law in applying any test in medicine.

AUTHORS' ABSTRACTS

Eye, Ear, Nose and Throat

The Use of Non-Specific Protein in Ophthalmology. T. J. Dimitry, New Orleans, La. New Orleans Medical and Surgical Journal, Vol. 70, No. 3, September, 1917, p. 231.

In this article Dr. Dimitry cites the results obtained by various workers in the field of non-specific therapy, and reports results in the use of milk as a non-specific protein. It is interesting to note the good results in trachoma, acute gonorrheal conjunctivitis and interstitial keratitis by its treatment.

The writer advises using milk to secure protein because of its being so easily obtained. The importance of this is realized when it is recalled that most of the workers in non-specific treatment are dependent upon the laboratory or some complicated technique.

Dr. Dimitry quotes good results obtained by Muller, Thaner and Friedlander when using the protein of milk for conditions similar to those reported in this paper.

The method employed was that of boiling milk for five or ten minutes, allowing it to cool, and injecting 5 c. c. into the gluteal region, repeating the dose every four or five days. In some cases 10 c. c. and in others a few drops were used. Subconjunctival injections were also made in a few cases.

The reaction following the injections was a rise of temperature. Those cases showing a

greater rise represented the best clinical results.

Although no evil results arose, the investigator very wisely gives a note of warning in the use of this treatment when he says: "How much to use and how often need investigation; also if the cow's milk that we used was always furnishing the same amount of protein. Was there a danger when other substances contained therein were considered?"

Without a doubt the non-specific protein has a beneficial effect, and in the eyes of careful investigators we may expect astonishing results.

Tuberculosis of the Retinal Vessels with Recurring Hemorrhages and Proliferating Retinitis. Frank R. Spencer, Boulder, Colo. The Journal of Ophthalmology and Oto-Laryngology, Vol. XI, No. 9, September, 1917, p. 275.

Tuberculosis of the retinal vessels is usually found in young adults whose general health seems otherwise perfect. In fact, a complete physical examination often fails to reveal a primary focus of infection.

Ocular lesion is secondary to some isolated primary focus in the lungs or lymph nodes. Several authors believe infection is of the bovine type, and they ascribe primary focus to mesenteric lymph nodes, as such patients often give a history of drinking large quantities of milk daily.

These patients usually respond with a local and a general reaction to tuberculin, and they may give a focal reaction. While focal reaction is very important for an absolute diagnosis, yet it is by no means necessary, and a severe focal reaction should be avoided, as this means further hemorrhage from retinal vessels into the vitreous with loss of more vision.

Treatment with tuberculin in small doses is probably the best means of combatting this disease. This should be given at intervals of from two to six weeks. Too frequent injection of tuberculin for this disease is apt to mean recurrent hemorrhages, and these must be avoided if the disease is to be treated properly. Fundi should be examined the second and third days after each injection to make sure that too large a dose is not being given. If the treatment is to do any good permanently, it must be continued for a period of months, or even a few years, in order to prevent relapse or recurrence.

Strabismus or Squint: Its Treatment by Glasses. James J. Pattee, Pueblo, Colo. Colorado Medicine, Vol. 14, No. 6, June, 1917, p. 151.

Crosseye is accompanied by amblyopia (blindness) of one eye in the large majority of cases. The amblyopia is of greater importance than the strabismus, although it is not so regarded by the laity. The amblyopia and crosseye can be cured by glasses in the majority of cases. The spectacles must be furnished before the case is eight years of age. No child with crosseye is too young for glasses. The child will ask for its glasses as it will its clothes. Nearly all cases of crosseye are very far-sighted. This, without spectacles, causes great strain. Eye strain (due to far-sightedness) is relieved, amblyopia prevented and crosseye cured by glasses furnished early.

SPECIAL ARTICLE

REGULATIONS FOR LOCAL BOARDS IN EXAMINATIONS FOR THE NEXT DRAFT

Office of the Provost Marshal General,
Washington, D. C., January 28, 1918.

Part VIII, sections 182, 183, 184, 185, 186, 187, and 188 of the Selective Service Regulations are changed to read as follows:

PART VIII—PHYSICAL EXAMINATION

Section 182—*Preliminary Statement.*

In view of the contemplation of a further investigation and classification of registrants physically qualified for special and limited military service, who have *not* the physical qualifications for general military service, and in view of the decision to accept some registrants for general military service with remediable defects, who are otherwise physically and mentally qualified for military service, the following new regulations for the physical examination of registrants by the physician on the Local Board become necessary.

Acceptance, General Service.—Local Boards can accept registrants for general military service only when they come within the standards for unconditional acceptance with or without remediable defects.

Rejection, General Service.—Local Boards can reject registrants for general military service only when the registrant comes within the standards of unconditional rejection.

Other Cases.—All other registrants must be referred by the Local Board to the Medical Advisory Board for further examination and classification.

Unconditional Rejection.—Physicians on the Local Board are not required to make a complete examination of every registrant. The moment the physician on the Local Board finds a mental or physical defect placing the registrant within the standards of unconditional rejection the physician on the Local Board shall indicate this on Form 1010, section 282, page 156, after "physically deficient and not physically qualified for military service by reason of"—in the space following write the disqualifying defect.

The moment the physician on the Local Board finds a defect which does not come within the standards of unconditional rejection, but takes the registrant out of the class within the standards of unconditional acceptance, he will refer the registrant to the Medical Advisory Board and so indicate this on Form 1010, section 282, page 156.

Registrants can not be declared physically qualified for general military service (see Form 1010, section 282, page 156) until the complete examination has been made by the physician on the Local Board, with the finding that the candidate comes in every instance within the standards of unconditional acceptance with or without remediable defect. Then it is so noted and recorded on Form 1010, section 282, page 156, and if there is a remediable defect, this is also recorded after "physically qualified for general military service." (C. S. S. R. No. 3, Jan. 28, 1918.)

Section 183.—*Place, Order, and Method of Examinations.*

Method.—The physical examination should take place in a large, well-lighted room. Question the registrant first about his physical condition, observe his mental characteristics and speech.

Be on the lookout for malingering throughout the entire examination. Examine the scalp and face, nose, teeth, mouth, and fauces. Palpate the skull, then have the registrant strip off all his clothing, and make a general inspection of the skin over the entire body, of the conformation of the back, chest, and abdomen, of the region of the neck and buttocks, and of the upper and lower extremities. Inspect for the bulgings of hernia, inspect the genitals, palpate the testicles, inspect the anus, tell the registrant to move all the joints of the extremities and to bend the neck and body for observations on movements of the spine.

Take the weight and height and chest measurements while the registrant is stripped of all his clothing. The chest measurements are taken on the level just above the nipple with the tape horizontal.

During examination of the chest and of the eye and ear the registrant may put on his underdrawers, trousers, shoes, and stockings.

Guard against the registrant becoming chilled.

The local physician can use his judgment as to the order of the physical examination. (C. S. S. R. No. 3, Jan. 28, 1918.)

Section 184.—*Special Examinations and Standards for Unconditional Rejection, Unconditional Acceptance, with or Without Remediable Defects, and Reference to the Medical Advisory Boards.*

Authority of Local Boards.—Remember that the Local Boards can accept or reject for general military service or refer the registrant to the Medical Advisory Board for further examination and classification. The Local Boards can not place the candidate in the class "physically qualified for special or limited military service," except upon and in accordance with the finding and recommendation of the Medical Advisory Board.

(a) Mental and Nervous.—Reject insanity, epilepsy, idiots, imbeciles and proven chronic alcoholism when the examination places the registrants within the standards of unconditional rejection as defined below.

Insanity.—All registrants who are committed or who have been committed to a licensed institution for insane or licensed private institution, who bring proof from verified records of institution or State Boards.

Epilepsy.—The registrant will be declared an epileptic when verified histories establish the

disease as of long duration and of the type of grand mal.

Idiot.—A registrant so deeply defective in mind from birth or from early age that he is unable to guard himself against common physical danger.

Imbecile.—A registrant so deeply defective in mind from birth or from early age as to be incapable of earning a livelihood, but able to guard himself against common physical danger.

Chronic Alcoholism.—The registrant on examination must show suffused eyes, prominent superficial blood vessels of nose and cheek, flabby, bloated face, red or pale purplish discoloration of mucous membrane of pharynx, and soft palate; muscular tremor in the protruded tongue and extended fingers, tremulous handwriting, emotionalism, prevarication, suspicion, auditory and visual hallucinations, persecutory ideas.

The history or evidence that the registrant has been frequently and grossly intoxicated is not of itself sufficient for a diagnosis of chronic alcoholism and rejection.

Accept all registrants with apparent normal understanding and whose speech can be understood and who have no definite signs of organic disease of the brain, spinal cord, and peripheral nerves.

Refer all other registrants to the Medical Advisory Board.

(b) Skin.—*Reject* registrants who have long-existing skin diseases which are so severe or so disfiguring as to be permanently incapacitating, or so disgusting or so disfiguring as to render the sufferers from them unsuitable for common social intercourse, or long-existing ulcers so severe or so extensive as to be permanently incapacitating.

Refer remediable ulcers to the Medical Advisory Board.

Accept registrants who have skin diseases which run an acute or temporary course, or are trivial in character, or do not interfere with the general health, or are not incapacitating. Among the common skin conditions coming in this category are: Acne, Anomalies of Pigmentation, Scars, Condylomata, diseases produced by pus infection, Eczemas which have not been of long duration, all forms of Naevi not producing great disfigurement or deformity, all forms of Pediculosis, Scabies, Psoriasis, all forms of Ring Worm, Warts, Callosities.

Refer all other cases of skin diseases to the Medical Advisory Board.

Registrants with infectious, syphilitic, and parasitic diseases of the skin of temporary character, or with other acute skin diseases, should be advised to accept treatment immediately, pending receipt of orders to report for duty.

Accept all registrants with syphilitic lesions of the skin.

(c) Head.—Accept registrants with depression in the skull or with any abnormalities of the bones of the skull unless they come within the standards of unconditional rejection noted under (a) Mental and nervous.

Refer all doubtful cases to the Medical Advisory Board.

(d) Spine.—Accept all registrants with a normal spine or with slight curvatures which do not interfere with function and weight-bearing power.

Reject all registrants with signs and symptoms of undoubted extensive disease of the vertebrae which totally incapacitate. The wearing of a plaster jacket does not of itself reject.

Refer all other registrants and doubtful cases to the Medical Advisory Board.

(e) Ears.—Reject when it can be absolutely proven that the registrant is totally deaf in *both* ears.

Accept when the hearing in both ears is above the standard of 10/20.

Refer to the Medical Advisory Board when the hearing is below the standard of 10/20 in one or both ears, or there is *complete deafness in one ear.*

Test of Hearing.—To determine hearing, the hearing of the examiner should be normal.

Place the registrant facing away from the assistant, who is twenty feet distant, and direct him to repeat promptly the words spoken by the assistant. If the registrant can not hear the words at twenty feet, the assistant should approach foot by foot, using the same voice, until the words are repeated correctly. Examine each ear separately, closing the other ear by pressing the tragus firmly against the meatus; the examiner faces in the same direction as the registrant and closes one of his own ears in the same way as a control. The assistant speaks in a low conversational voice (not a whisper) just plainly audible to the examiner, and should use numerals, names of places, or other words or sentences until the condition of the applicant's hearing is evident. The acuity of hearing is expressed in a fraction the numerator of which is the distance in feet at which the words are heard by the registrant and the denominator the distance in feet at which the words are heard by the normal ear; thus 20/20 records normal hearing, 10/20 imperfect hearing, etc. If any doubt as to the correctness of the answer is given, the registrant should be blindfolded and a watch should be used, care being taken that the individual does not know the distance from the ear at which it is being held. The watch used should be one whose ticking strength has been tested by trial on a normal ear.

Accept all registrants whose hearing is above the standard of 10/20 in both ears and who have no chronic discharge from the middle ear.

37883°—18——2

Refer to the Medical Advisory Board all registrants with chronic discharge from the middle ear and all doubtful cases.

(f) Eyes.—*Reject* all registrants with the absence of one eye and when there is no doubt they are totally blind in both eyes.

Accept all registrants with vision 20/100 in one eye and 20/40 in the other without glasses or 20/100 in each eye without glasses if correctable with glasses to 20/40 in either eye. When the physician on the Local Board is not supplied with test glasses and the registrant has not glasses refer to the Medical Advisory Board.

Accept all registrants who come within or exceed the above visual requirements though they may have the following slight defects:

Slight adhesions of the lids to the eyeball.

Small pterygium.

Slight eversion of the lids.

Ptosis, when not interfering with vision.

Strabismus, if vision up to standard.

Iridectomy, or other operation is in itself not a cause for rejection if condition for which it was performed is relieved.

Color-blindness is not a cause for rejection.

Refer to the Medical Advisory Board all other cases.

Vision.—To determine the acuity of vision, place the person under examination with back to window at a distance of 20 feet from the test types. *Examine each eye separately, without glasses*, covering the other eye with a card (not with the hand). The applicant is directed to read the test types from the top of the chart down as far as he can see, and his acuity of vision recorded for each eye, with the distance of 20 feet as the lowest line he can read correctly at the denominator. If he reads the 20-feet type correctly, his vision is normal and recorded 20/20; if he does not read below the 30-feet type, the vision is imperfect and recorded 20/30; if he reads the 15-feet type, the vision is unusually acute and recorded 20/15, etc.

(g) Mouth, Nose, Fauces, Pharynx, Larynx, Trachea, and Esophagus.—*Reject* all irremediable deformities and diseases which interfere with mastication of ordinary food, and interfere with speech so the registrant can not be understood.

Reject registrants who have a permanent gastrostomy or who are wearing a permanent tracheotomy tube.

Accept all registrants who have not complete obstruction to nasal breathing.

Accept all registrants with nasal polypi, deviation of septum, enlarged tonsils and adenoids if obstruction to nasal breathing is not complete, and all remediable benign tumors.

Refer all other cases and all doubtful cases to the Medical Advisory Board.

(h) Neck.—*Reject* fully developed exophthalmic goitre when there is present thyroid enlargement, pulse rate above 120 and exophthalmos.

Accept registrants with normal necks, moderate enlargement of the thyroid with no toxic symptoms. Accept with a few palpable lymph glands with or without healed scars and no sinuses.

Refer all other and doubtful cases to the Medical Advisory Board.

(i) Lungs.—The examination of the lungs by the physician on the Local Board should in all instances include the following procedures:

Each registrant should be required to exhale his breath, cough, and immediately breathe in. The chest should be auscultated during this process. All men who show moist sounds during cough or during respiration should be referred to the Medical Advisory Board.

All registrants should be referred to the Medical Advisory Board in whom at this examination there is well-marked dullness on percussion, increased transmission of the voice, harsh respiration, and prolonged expiration even though there be no rales present. Men distinctly under weight or with sunken and deformed chests should be referred to the Medical Advisory Board, even if the examinations above noted are negative.

Accept registrants when the examinations noted above are distinctly negative, and the physician of the Local Board is of the opinion that there is no evidence of disease of the pleura, lungs, and mediastinum.

Refer all other cases to the Medical Advisory Board.

Reject no registrants for diseases of the lungs, pleura, mediastinum, and chest wall, except men with tuberculosis or other diseases of lungs, pleura, and mediastinum, who are confined to their beds, when verified histories establish unmistakably the existence and long duration of diseases.

(j) Heart and Blood Vessels.—The physician on the Local Board shall make the following examinations of the heart and blood vessels:

1. The *examination* should in all cases include:

(a) Location and determination of character of apex impulse.

(b) Auscultation of the heart sounds over apex, lower sternum and second and third interspaces to right and left of sternum, noting accentuation of sounds and murmurs.

(c) Inspection of root of neck and upper thorax and percussion of first interspace on each side of manubrium for evidence of aneurism.

(d) Count of radial pulse, observation of its rhythm, and palpation of radial arteries for unusual thickening or high tension.

(e) Exercise test: Hopping 100 times on one foot. At close count heart rate with stethoscope over apex, listening for murmurs and noting how long tachycardia and unusual dyspnea persist. After two minutes neither should be marked.

After this examination the Local Board shall accept all registrants who come within the standard for unconditional acceptance, which is as follows:

STANDARD FOR UNCONDITIONAL ACCEPTANCE

2. Subjects with apex impulse within the left nipple-line and not below the fifth interspace, of normal, not heaving character, with normal sounds, free from murmurs, without pulsation or dullness above the base of the heart, with regular pulse of normal rate, who have no unusual thickening of the arteries nor evidence of high blood pressure, and who show a normal response to the exercise test, may be unconditionally accepted.

3. The Local Board shall reject all registrants presenting definite symptoms of circulatory failure, viz, a combination of breathlessness, marked cyanosis, and edema.

4. All other cases shall be referred to the Medical Advisory Board.

(k) Abdomen.—Accept all registrants who, after an inspection percussion and palpation of the abdomen, show no enlargement of the liver and spleen and no tumor of the abdominal wall nor within the abdomen.

Accept all registrants who give a history of abdominal trouble suggesting a chronic appendi-

citis or gall-bladder disease and who on examination present no signs of such diseases.

Accept all registrants with small or medium reducible inguinal, femoral, umbilical, and postoperative hernia.

Accept all registrants with abdominal scars who give a history of operation for hernia, appendicitis, gall-bladder disease, or for some abdominal injury, providing there is no large hernia in the scar.

Refer to the Medical Advisory Board all registrants who have jaundice, who have enlargement of the liver or spleen or palpable tumor of the abdominal wall or within the abdomen.

Refer to the Medical Advisory Board all registrants who from history and examination suggest very strongly the presence of a gastric or duodenal ulcer or some serious intra-abdominal disease.

Refer to the Medical Advisory Board all irreducible hernia and all very large hernia.

Reject no abdominal cases.

When during the examination of the abdomen a kidney is palpable and even movable, if it is not enlarged, accept the registrant. If it is distinctly enlarged, refer to the Medical Advisory Board.

(l) Anus.—*Accept* all registrants in which the anus is apparently normal and all with small external and internal hemorrhoids, fissures, and condylomata.

Refer all other cases to the Medical Advisory Board.

Reject no lesions in this area.

(m) Genito-urinary Organs and Venereal Diseases.—*Reject* extraversion of the bladder, distinct hermaphrodites, and registrants whose penis has been totally destroyed by operation or disease.

Accept all cases with no signs of disease of the genito-urinary organs, all acute and chronic cases of gonorrhea and syphilis who have no complications permanently incapacitating.

Accept varicocele, hydrocele, undescended testicle, and registrants with but one testicle, providing they do not give a definite history that the removed testicle was the seat of malignant disease.

Refer all cases in which the history and examination indicate an acute or chronic nephritis, all cases in which you find blood in the urine, and all other doubtful cases to the Medical Advisory Board.

Registrants with gonorrhea or syphilis should be advised to accept treatment pending receipt of orders to report for duty.

(n) Affections Common to Both Extremities.—*Reject* all diseases, injuries, and amputations which have destroyed the function of *both* lower limbs or *both* upper limbs.

Reject all registrants with an extensive disease of one joint associated with sinuses of long duration.

Accept all registrants who have no loss of function of both upper and lower extremities and no restriction of joint function.

Refer to the Medical Advisory Board all registrants with one good arm *and one* good lower extremity and all other doubtful cases.

(o) Hands.—Accept all registrants whose function of the wrist and fingers is not permanently impaired and who have not lost either a thumb or the index finger on the right hand, or two fingers on one hand.

Refer all other and doubtful cases to the Medical Advisory Board.

(p) Lower Extremities.—Accept all registrants with movable joints and no deformity which interferes with walking and weight-bearing power.

Accept registrants with varicose veins when not associated with edema and leg ulcer.

Accept all foot and ankle lesions if they do not interfere with the wearing of an ordinary shoe and with walking and weight-bearing power; hammer toe, hallux valgus, bunion, callosities, the different types of flat-, club-, and claw-foot are to be accepted if they come within the above requirements.

Refer all doubtful and other cases to the Medical Advisory Board.

Reject no foot cases.

(q) Height, Weight, and Chest Measurements. Registrants whose chest measurements do not come within the limits of the table and who have no disqualifying defect are referred to the Medical Advisory Board.

Accept registrants above 78 inches in height when exceptionally well proportioned. Refer all other such cases to the Medical Advisory Board.

Reject registrants of less than 58 inches in height.

Refer to the Medical Advisory Board registrants whose height is more than 58 inches and less than 60.

Reject registrants whose weight is less than 100 pounds unless it is plainly due to some recent illness and otherwise the registrants have no disqualifying defect.

Registrants whose weight is more than 100 pounds and less than 114 pounds and who have no other disqualifying defect are to be referred to the Medical Advisory Board.

Registrants under weight in proportion to their height (see table), unless it is plainly due to some temporary cause, are referred to the Medical Advisory Board. When this underweight can reasonably be explained and the registrant otherwise is physically fit, *accept.*

Registrants with overweight are to be *accepted* unless the obesity interferes with normal physical activity. Refer all doubtful cases to the Medical Advisory Board.

The following weights and measures should be taken with the greatest care:

(r) General.—Refer to the Medical Advisory Board all registrants who, from their history and after their complete examination, suggest the possibility of tuberculosis in some part of the body.

Refer to the Medical Advisory Board all cases who, at the general examination, seem to have a marked anemia even though otherwise physically fit.

Refer to the Medical Advisory Board all cases who, after examination, impress you as in an extreme state of debility, even if the other examinations are negative.

A.

Standard Accepted Measurements

Height	Weight	Chest Measurement	
		At expiration	Mobility
Inches	Pounds	Inches	Inches
60	120	31	2
61	120	31	2
62	120	31	2
63	124	31	2
64	128	32	2
65	130	32	2
66	132	32½	2
67	134	33	2
68	141	33¼	2½
69	148	33½	2½
70	155	34	2½
71	162	34¼	2½
72	169	34¾	3
73	176	35¼	3
74	183	36¼	3
75	190	36¾	3¼
76	197	37¼	3½
77	204	37½	3¾
78	211	38¼	4

B.

The following variations from the standard shown in Column A are permissible when the applicant is active, has firm muscles, and is evidently vigorous and healthy.

Height	Weight	Chest Measurement	
		At expiration	Mobility
Inches	Pounds	Inches	Inches
60	114	30	2
61	114	30	2
62	114	30	2
63	116	30	2
64	120	30	2
65	120	30	2
66	120	30¼	2
67	120	30½	2
68	121	30¾	2
69	124	31	2
70	128	31¼	2
71	133	31¾	2
72	138	32¼	2½
73	143	32¾	2½
74	148	33½	2½
75	155	34¼	2¾
76	161	34¾	2¾
77	168	35¼	3
78	175	35¾	3

Refer to the Medical Advisory Board all registrants who give a history of an operation or any other treatment for a malignant tumor, even if there is no evidence of recurrence, and all registrants who, at examination, have any tumor or ulcer suspicious of malignancy.

Registrants confined to their homes, hospitals, or institutions who claim to be suffering from hopeless totally incapacitating diseases should be thoroughly investigated by the Local Board in consultation, if necessary, with the Medical Advisory Board.

Some of these registrants may have remediable defects. In others the claim may be incorrect. (C. S. S. R. No. 3, Jan. 28, 1918.)

Section 185.—*Dental Requirements.*

Accept registrants who have three serviceable natural masticating teeth above and three below opposing and three serviceable natural incisors above and three below opposing. All these teeth must be so opposed as to serve the purpose of incision and mastication. Therefore, the registrant shall have a minimum total of six masticating teeth and a minimum total of six incisor teeth.

The needed dental treatment will be performed at the cantonment. However, if time permits, a registrant, if he prefers, may have the necessary work done at home previous to his induction into military service.

DEFINITIONS

(a) The term "masticating teeth" includes molar and bicuspid teeth, and the term "incisors" includes incisor and cuspid teeth.

(b) A natural tooth which is carious (one with a cavity), which can be restored by filling, is to be considered as a natural serviceable tooth.

(c) Teeth which are restored by crowns or dummies attached to fixed bridge work, when well placed, shall be considered as serviceable natural teeth, when the history and the appearance of these teeth is such as to clearly warrant such assumption.

(d) A tooth is not to be considered a serviceable natural tooth when it is involved with excessively deep pyorrhea pockets, or when its root-end is involved with a known infection that has or has not an evacuating sinus discharging through the mucous membrane or skin.

Refer all other cases to the Medical Advisory Board.

No registrants can be rejected on account of teeth defects. (C. S. S. R. No. 3, Jan. 28, 1918.)

Section 186.—*Degree of Deficiency for Disqualification.*

In these regulations the standards for unconditional rejection which places the registrant in the class physically deficient and not physically qualified for military service are clearly defined. When the Local Board is in any doubt, the registrant should be referred to the Medical Advisory Board. The attention of Local Boards and examining physicians is called to paragraph 3 of Section 123, page 64, after the side heading, *Where Held Disqualified,* which is as follows:

If the registrant is held to be physically disqualified by the examining physician, the Local Board shall, unless it decides by unanimous vote that the disqualification is so obvious as to leave no room for reasonable doubt, send the registrant before such Medical Advisory Board in the manner just provided.

This shows that there must be a unanimous vote of the Local Board to disqualify the registrant and the disqualification must be so obvious as to leave no room for reasonable doubt.

The object of this ruling has already been given. (C. S. S. R. No. 3, Jan. 28, 1918.)

Section 187.—*Temporary Defects.*

Registrants confined to their homes, or hospitals, or who present themselves with some temporary defect the result of an acute disease, in-

jury or operation, or who are waiting for operation, should be granted a reasonable delay for completing the physical examination.

All of these cases should be thoroughly investigated by the physician on the Local Board.

Registrants with contagious, communicable, reportable diseases should not be ordered before the Local Board for examination until they are discharged by the boards of health.

Registrants recovering from diphtheria should not be ordered to the cantonments until two negative cultures have been obtained from the throat. In localities where there is no provision for this bacteriological work, consult the Medical Advisory Board. (C. S. S. R. No. 3, Jan. 28, 1918.)

Section 188.—*Special and Limited Military Service.*

In view of the importance of a thorough investigation and classification of registrants belonging to this group, Local Boards are required to refer all of such registrants to the Medical Advisory Board.

The physician on the Local Board is urged to consult with the Medical Advisory Board about this group and familiarize himself with the specific regulations and information soon to be given to the Medical Advisory Board concerning special and limited military service. (C. S. S. R. No. 3, Jan. 28, 1918.)

By order of the Secretary of War:

E. H. CROWDER,
Provost Marshal General.

AUTHORS' ABSTRACTS

Surgery

(Continued from page 149)

that normal and diseased sera in human beings will hemolyze human blood corpuscles. Some authors assert blood and sera of perfectly healthy animals are free of hemolytic action, but this is not true of diseased persons. Moss' illuminating experiments in agglutination and hemolysis, and the establishment of his four agglutinative sera distinctly helpful; is especially important since hemolysins appear to be increased or even created, **de novo**, in the blood of recipients by the continued injections of foreign sera or blood, although absent at first. This makes necessary careful testing of blood after o before each injection. No way of preventing reactions so far discovered. Lewisohn's statement that five grams of sodium citrate may be introduced in an animal without injury believed, although author has never given beyond two and one-half grams at a single dose.

Transfusion in primary and secondary anemias illustrated by cases of pernicious anemia, Addison-Biermier and Ehrlich types. Six transfusions of whole blood 600 c. c. each to total injections of 5,200 c. c. in a single case, with gains in weight up to 22½ pounds and improvement in the blood count from 735,000 red blood cells and 26 % hemoglobin to 4,500,000 red blood cells and 82 % hemoglobin. Yet all of these cases of pernicious anemia relapse and go on to fatal termination. Secondary anemias, cause unknown, malaria, gastric hemorrhage, etc., treated by direct transfusion sodium citrated blood, with markedly successful results.

Impressions received by these clinical experiences in secondary enemias of variable causes are that immediate and prompt improvement in patients' condition follow. Life is prolonged until other methods of treatment may prove successful in destroying or controlling disease. In genuine pernicious anemia, even in advanced cases, great improvement, with prolongation of life and apparent restoration sometimes is secured. Relapses an dultimate death are believed to be inevitable.

The Surgery of Cystocele, Rectocle and Procidentia Uteri. A. L. Blesh, Oklahoma City, Okla. The Journal of the Oklahoma State Medical Association, Vol. X, No. 9, September, 1917, p. 353.

The problem of dealing with procidentia uteri differs materially in the parous or non-parous woman. In the former the problem is far more complicated as the maternal function is to be conserved if possible.

There is also a congenital type of retroversion and descensus uteri developmental in that there is a muscular deficiency in the posterior uterine wall usually associated with an anterior cervical displacement. The low uterus associated with and as a part of a general visceroptosis is also to be considered. Early stages of all are usually the most painful on account of the ligament tug. Ligaments are merely guy-ropes and are not meant to sustain weight.

There are but two ways to hold a low uterus dependably with anterior cervical displacement: (1) in the parous woman the Dudley broad ligament operation or the author's modification combined with a round ligament operation; (2) abdominal wall fixation in the non-parous.

The author's modification of the Dudley is as follows: The anterior vaginal cul-de-sac is opened, but not through the peritoneum, exposing the lower uterine insertion of the broad ligaments. These are now caught up on each side and brought in front of, and stitched to, the cervix without severing them from the uterine attachment.

Anatomical restoration does not always relieve symptoms. Many times the symptomatology is not due to the malposed uterus. This should be settled before the woman is subjected to operation. The author has settled this point by having the patient wear a well-fitted Hodge pessary for a month. If that gives relief a well-selected operation will also do so.

Southern Medical Journal

JOURNAL OF THE
SOUTHERN MEDICAL ASSOCIATION
Incorporating Gulf States Journal of Medicine and Surgery and Mobile Medical and Surgical Journal

Published monthly. Price $3.00 per year; 25 cents the single copy.
Address Southern Medical Journal, Empire Building, Birmingham, Alabama
Entered at the Birmingham, Ala., postoffice as second-class matter under Act of Congress, March 3, 1879

*Dr. SEALE HARRIS, Editor
Dr. M. Y. DABNEY, Acting Editor
Dr. J. R. GARBER, Associate Editor
C. P. LORANZ, Business Manager

*On active duty, Medical Reserve Corps, U. S. Army. Granted leave of absence for period of war.

VOL. XI FEBRUARY 1918 No.2

EDITORIAL DEPARTMENT

OUR SERVICE

The Editor of the JOURNAL, along with representatives of many other publications, pledged his full support to the Government in the prosecution of the War. Believing that this is, without any exception, the greatest crisis our Nation has ever faced, not even excepting the four bloody years of the Civil War, the JOURNAL has talked, and will continue to talk, war and do all within its power to awaken the people to a realization of the true danger which threatens them.

We are clearly conscious of the fact that so much war propaganda renders us liable to criticism on the ground that "we read war in the newspapers and in the lay magazines and therefore do not wish to find it everywhere we turn." Our only reply to that is that war at best is not a pleasant thing nor is it a form of sport to be indulged in for an hour here and a moment there. It is a relentless, cruel business which no amount of effort on our part can render pleasing. To be successful in it we must lend every possible aid to our Government. It should be our one aim.

Many automobile factories and various other industries are changing their routine schedules and are making useful articles of warfare for the Army and Navy. Why should not the JOURNAL likewise do its part in its limited way? This is no time for considering self. The War should be each man's main business and in doing so if necessary his regular vocation should become his side line, so to speak. Only by doing that do we become in reality true patriots.

ABUSE OF PITUITARY EXTRACT

Pituitary extract has been employed in obstetrical work for the past several years, and though the text-books in no unmistakable terms and the pharmaceutical houses by special pamphlets warn the profession that it is a drug of great value yet a serious menace to the safe conduct of a labor when improperly handled, there is a widespread, injudicious and promiscuous use of it by physicians.

The busy city practitioner—medical or surgical man—will employ this preparation for selfish ends, because he has other work to attend to and could not possibly think of being detained by a "labor case" for any longer period than two or three hours. Then, there is the country doctor who will employ pituitary extract because he has read about its wonderful action or has been misled by the unmeasured experiences that some of his colleagues claim to have had with the drug. Still another class, both in the city and rural communities, use this drug in total ignorance of its oxytoxic powers, of the mechanism of labor and of the requirements that *must* be fulfilled before its administration. In short, a dangerous extract is in the hands of the inexperienced and of the selfish, time-saving physician which places in jeopardy the lives of thousands of women and babies.

The law regards human life so highly as

to impose a severe penalty upon the person who decrees willfully to sacrifice it whether "in utero" or "extra-utero," and the physician feels his obligation to society so sacred that he abhors and abstains from taking part in any criminal work; yet, these same men think nothing of the invalid mothers and of the maimed, injured or dead babies that result from the careless and needless use of pituitary extract.

Lacerated cervices and perenea, rupture of uteri, retained placentæ, secondary uterine hemorrhage, delayed labor due to rigid os, are some of the ear-marks of the improper use of pituitary extract; while cephalhematoma, fetal intracranial hemorrhage, premature rupture of the membranes, followed by fetal death due to excessive birth pressure, are other end-results of this same error that appear on "certificates" as "intra-uterine asphyxia." Indeed, the drug may correctly be termed an instrument that demands of the physician an intimate knowledge of its indications and contraindications, just as in the case of forceps and other methods of accouchement force.

It seems that a large per cent. of the profession use this preparation according to directions upon the box in which the ampoules are purchased, never considering the exigencies of the case, and work on the hypothesis that if a little does good, then a larger dose must have still better effect. Is it any wonder that the extract has ridden the tide of abuse when it has been injected in the presence of contraction rings, malpositions and malpresentations, disproportions and what not?

Societies organized for infant welfare work and to reduce the high child-birth morbidity statistics, biological houses in behalf of the charges on society, and physicians in behalf of mankind would do well to restrict the distribution of pituitary extract by seeking to require those employing it an assurance of some knowledge of its pharmacological action, its indications and contraindications.

CONSERVATION OF PHARMACEUTICALS

In a former issue we had occasion to call attention to the desirability of checking thoughtless drug wastes during the war. Very much in keeping with this idea we find that a most timely paper called "Emergency Formulas"* has just been read before the Minnesota State Pharmaceutical Association at Minneapolis during the early part of this month.

Substitutes can often be found for alcohol, sugar and glycerin in prescriptions, and it would be well for the physician to acquaint himself with some of them by referring to that article.

"The annual consumption of glycerin and sugar in the United States in the preparation of medicines must be large. Allowing each of 40,000 druggists 50 pounds of glycerin and 500 pounds of sugar per year, we arrive at an estimated yearly consumption of 2 million pounds of glycerin and 20 million pounds of sugar. A very large proportion of this material could be saved for other purposes, since glycerin and sugar are used very largely as mere sweetening agents. But in war time we must not take too literally the aphorism by which ancient physicians practiced the healing art *'tuto, cito et jucunde,'* and patients must learn to do without some of the adjuvants that have tended to make their physic palatable.

'In attempting to do without or to reduce the consumption of glycerin and sugar, it must be remembered that both are excellent preservatives, and that the former is useful in extracting tannin from drugs and holding it in solution. Again, glycerin is frequently used by physicians for its demulcent and hygroscopic properties, and an effort should be made to replace it with some other agents having similar actions. Thus mucilage of Iceland and Irish moss, mucilage of starch, mucilage of acacia and tragacanth may often be used with advantage in the local treatment of irritated mucous membranes. Mucilage of Irish moss forms a menstruum for most cough syrups, greatly superior to syrup. But its use is not generally known.

"While the official demand on stocks of glycerin and sugar is heavy, the wide use of these

*Smith, F. A. U.: "War Emergency Formulas," Northwestern Druggist, February, 1918.

substances in the manufacture of unofficial preparations could be very materially curtailed without causing serious hardship to producer or consumer. Once let it be shown to pharmacists how easily the official formulas may be modified, in the interest of the Nation and of our Allies, and a speedy reduction of the use of glycerin and sugar may be expected in these unofficial preparations. The druggist is waiting for a lead. Now is the time to show him in a concrete way how to help the country."

It is suggested that fresh infusions be substituted for alcoholic fluid-extracts, tinctures, elixirs, etc.

The Government tax on alcohol has done much to reduce its consumption in medicine. The prohibition wave may have played an important roll in precipitating the sudden passage of rigid laws regulating its sale. Now that the supply for the popular demand for alcohol as a beverage has been curtailed almost exclusively in behalf of medicine, it becomes the honorable duty of the physician to lend his support to the elimination of the vicious trade in this commodity. To render alcohol ever accessible to the sick, the lawmakers have provided for the purchase and use of it upon the prescription of a physician. In turn the doctor should fully appreciate the confidence reposed in him, and he should therefore frown upon any one who approaches him to secure alcohol as a beverage in evasion of the law.

It is apparent that with but little effort on our part each may materially reduce the quantity of sugar, glycerin and alcohol prescribed in medicine, and that it is not only possible but imperative that such conservation be begun at once.

MAJOR THEODORE CALDWELL JANEWAY—IN MEMORIAM

When a celebrated general in the army gives up his life on the field of battle, history rightly records him as a hero; but in the same war, if from exposure, overwork, or other causes in the line of duty, another great man contracts disease and dies, the end of a brilliant career is not so spectacular in the public mind, but the result is the same, i. e., a noble life is sacrificed in the patriotic service of a country. So that when Major Theodore Janeway, from months of overwork in the performance of his duties in the Surgeon-General's Office, was in a state of such lowered resistance that he could not withstand an attack of serious illness, and died of pneumonia on December 26, 1917, a great and illustrious life was sacrificed in heroic devotion to patriotic duty.

When war was declared against Germany, Surgeon-General Gorgas, desiring to make the Medical Department of the United States Army the most efficient organization ever perfected for protecting the health and lives of soldiers, called a group of great clinicians to aid the regular Medical Corps in developing the different branches of medicine and surgery in the Army. Among the first to be called was Professor Theodore Janeway, Head of the Department of Medicine of the Johns Hopkins University and Chief of the Medical Service of the Johns Hopkins Hospital. The selection of Major Janeway for this important service inspired confidence among physicians as to the ability of the Surgeon-General to organize the medical profession of the country on a war basis; because it brought into the service a man who was recognized as one of the ablest clinicians and one of the greatest executives in medicine.

Never did a man accomplish more in the same length of time than did he in organizing the medical service of the thirty-three cantonment hospitals of one thousand beds each. He succeeded in placing as chiefs and assistants on the medical service of the cantonment hospitals many of the strongest men in American medicine. Indeed, there can be no doubt that in a month after the National Army was called into service, the base hospitals were

better prepared, both in personnel and equipment, to care for sick soldiers than any temporary military hospitals in the history of warfare.

Major Janeway's remarkable accomplishment in organizing the medical services of our wonderful military hospitals was the crowning achievement of a life of brilliant successes. The son of the most distinguished internist of his time, the late Dr. Edward G. Janeway, of New York City, Theodore was educated and prepared for a brilliant career, and he lived up to his opportunities. He received his academic education at Yale University, and was graduated in medicine at the College of Physicians and Surgeons, of New York. He then spent several years in European clinics. On his return to New York, he was appointed Instructor in Bacteriology and later was made Professor of Medicine in the College of Physicians and Surgeons, which position he filled until he was called to the full-time Chair of Medicine in the Johns Hopkins Medical School in 1914.

Dr. Janeway made many important contributions to the science and literature of medicine, and while his studies and researches covered the broad field of internal medicine, he was perhaps best known as an authority on cardio-vascular diseases. His interest in the laboratory side of medicine was never allowed to lag on account of his laurels from clinical medicine.

It is not possible in a brief review to mention the important hospital positions that were held by Major Janeway and the honors that were bestowed upon him by the medical profession. Those mentioned are enough to show that he was one of the greatest men America has given to medicine; and his death at a time when there is such need for great leaders of his type is a serious loss, not only to the medical profession and to the Army, but to the entire people of a country engaged in the most terrible war in history.

COLONEL GOODWIN

At its Memphis meeting and for the first time in its history the Southern Medical Association elected Colonel T. H. J. C. Goodwin, C.G.M., D.S.O., of the British Medical Corps, and Colonel Charles R. Dercle, of the French Medical Corps, Honorary Members of the Association. At the time this action was taken, by unanimous approval, the organization felt that these men were worthy of this special honor and it was extremely gratifying that the opportunity for expressing our appreciation of these distinguished guests could be couched in such a unique and unprecedented manner. In recent news dispatches an item of interest concerning Colonel Goodwin has been noted, and because of his membership in the Association it may be of interest to mention the honor that has been conferred upon him by his native country.

Upon the retirement of Surgeon-General Sir M. W. Russel, K.C.M.G., C.B., from active service it is announced that Colonel Goodwin has been appointed Deputy Director General of the British Army Medical Service. Following an active career in the British Medical Service since 1893, Colonel Goodwin has filled numerous positions of trust and has received the Distinguished Service Order and many mentions for honor and achievement during military operations. Those who had the great pleasure of meeting him during the Memphis meeting can well recall the sterling qualities of the man and his thorough fitness for the mission that he was on in America, that of liaison officer in the Surgeon-General's Office, and for the last promotion at the hands of his Government.

Colonel Goodwin visited many sections while in the United States and never failed

to deliver a telling and timely message to the profession and to the public. His lectures at the Army Medical School in Washington were of intense interest, full of sympathy and precision and clearly portrayed the admirable attributes of mind and heart.

The Southern Medical Association points with pride to its foster children, and greater things may be expected of Colonel Goodwin and Colonel Dercle.

WOMAN'S OPPORTUNITY IN MEDICINE

The National emergencies that have been brought about by the war have rendered our people more resourceful and more economical than at any other period of our history.

Admitting that the war will last for two to three years longer, which will necessitate the raising of an army of three to four million men, with its full complement of physicians, what will be the status of the ranks of the civilian doctors and how will the shortage be met?

The answer might be found in the recent decision of the medical departments of Columbia and Harvard universities which permits women to engage in the study of medicine at those institutions. The medical departments of the Johns Hopkins, Cornell, Chicago, and several other institutions have been co-educational for some years, and with Columbia and Harvard added to the list, with the Washington University of St. Louis and many other leading medical institutions likely to follow suit in the near future, there is but one inference to draw, namely, that women physicians will take the places of some of those who are sent to the front.

There will be a demand for women physicians to replace the laboratory diagnostician, the research student, the hospital interne, the anesthetist, the public health student, the all-time college instructor and the internist, the pediatrician, the obstetrician, the roentgenologist and allied workers, within certain limitations. These specifications are made very reservedly and not to impeach the intellectual ability of "our sisters in kind" to perform fuller duties. Therefore, it becomes the function of the medical institutions to cull out the physically and mentally inferior female applicants and only graduate those physically fit for the arduous duties of a medical career.

The prospective medical student has been, or will be, drafted into the National Army, or perhaps is today training at some officers' training camp; and though the medical schools are in session this year, where will the students come from in another year? Furthermore, suppose the war should end in a few months,—say six to eight,—would the situation be altered? Clearly not, for all of the young doctors would be in the Medical Reserve Corps and in all probability would be used abroad and in America in caring for the sick and wounded, when those who left active practices would be allowed to return to their private work.

It is evident that during the war women offer the logical material for building up the depleted ranks of the profession. It devolves upon us the duty of maintaining the standards of ideals of American medicine by calling into service only those women who are calculated to reflect credit upon themselves and the medical profession.

Lest the guardians become the victims of procrastination, a word of warning should be sounded. Personal prejudices must be subordinated to National duty. Because the medical field of the United States was apparently overcrowded when we entered the war, is hardly an argument to remain indifferent to future problems.

Our naval, merchant marine and aviation fleets were all sufficient for their needs in the time of peace, but what a different situation they presented when war was suddenly thrust upon us.

POSTAL RATES AND MEDICAL JOURNALS

Congress has passed laws increasing the postal rates of all periodicals and papers from 50 to 900 %, the rate to be fixed according to a zone schedule. We believe the law is discriminatory, unwholesome, and that it should be repealed.

It is with no intention of dodging a patriotic issue that this protest is made, for if this were a war-time measure, every publication in America would cheerfully submit to the taxation, even though some would be forced to spend principal invested or perchance close doors. That this legislation has been agitated before is substantiated in a review of the reports of the commissions, headed by Charles E. Hughes and Boyce Penrose, respectively, that investigated the advisability of passing such laws in 1905 and again in 1911. They told Congress that it would be unwise and unjust. Therefore, it is quite plain that the press is not voicing protest against a measure that would aid in the successful prosecution of the War.

What America is today she owes in no small measure to the press, which may safely be termed the most potent and universal educational institution in existence. Muzzle the mouth of this agency by the imposition of prohibitive taxes, or in whatever manner you please, and simultaneously retrogressive changes in things material will inevitably result. Indeed, but for the public opinion reflected in the press, how would our worthy President have known the psychological moment for the declaration of war? How would the congressional representatives keep in touch with the sympathies and needs of their constituents? Yes, each part of this wonderful system, no matter how insignificant in circulation and politics, aids in crystallizing opinions and ideas of the body politic.

If the papers and periodicals are divested of news gathering and news dissemination except in the cities, it is logical to argue that the country will become excessively sectional, that there will be a greater disproportion between the education of the populace of cities and country towns; and the abandonment of the country by those who are making sacrifices to remain on the farm for the good of the Nation will be encouraged and we shall find that the Government will then have to make rural life more attractive and hold out to the children of those engaged in agricultural pursuits a more liberal and progressive education.

From the medical viewpoint this action of Congress is to be deplored. All physicians depend upon magazines for advancement in medical science,—some, through lack of interest in visiting clinics or attending conventions and societies, while with others it is similar to a correspondence course, for through this medium they get the helpful interchange of progressive steps being made in research laboratories, in large medical clinics, in medical conventions, etc.

Medical literature is unlike other types of journalism. In very many instances, the medical publication is the chief source of support of the medical organization that it represents; and should the official organ be discontinued, the society must necessarily be hampered in its work or, possibly, become disorganized. This would be a calamity to the medical fraternity as well as to the laity, and the JOURNAL

senses that the Government coincides in this belief, for what department of medicine was more representative at the Memphis meeting of the Southern Medical Association than the men in Government uniforms, some of whom were present by special request of Surgeon-General Gorgas.

It is to be hoped that Congress will see the advisability of repealing this law. At any rate, a word to your congressman on this subject would do no harm.

BOOK REVIEWS

Talks on Obstetrics. By Rae Thornton LaVake, M.D., Instructor in Obstetrics and Gynecology, University of Minnesota; Obstetrician in Charge of the Out-Patient Department of University of Minnesota; Associate Attending Obstetrician and Gynecologist to the Minneapolis City Hospital; Obstetrician in Charge of the Out-Patient Department of the Wells Memorial Dispensary; Obstetrician to the Swedish and Abbott Hospitals, Minneapolis; one-time Assistant Resident Obstetrician to the Sloane Hospital for Women in New York. St. Louis: Mosby, C. V., 1917.

This volume is unique in its arrangement and the author has chosen the most effective manner by which to attract the medical mind to important obstetrical problems. The talks on sepsis and the toxemias of pregnancy are very complete, their chief value being a recount of the personal experiences of the writer. The chapters on obstetrical operations, the warning note of the necessity of prenatal care and the avoidance of meddlesome midwifery, in every phase of obstetrical work, renders the edition a timely contribution.

Elements of Pediatrics for Medical Students. By Roland Godfrey Freeman, A.B., M.D., Adjunct Professor of Pediatrics in the New York University and Bellevue Hospital Medical School; Attending Pediatrist to the Roosevelt Hospital, New York; ex-President of the American Pediatric Association. New York: The Macmillan Company, 1917. $2.00.

A simple, practical treatise on the fundamentals of pediatrics, designed especially for the medical student and the general practitioner.

Obstetrics for Nurses. By Charles B. Reed, M.D., Obstetrician to the Wesley Memorial Hospital, Chicago. Illustrated. St. Louis: Mosby, C. V., 1917. $

The author has carefully and elaborately covered the many phases of normal and abnormal obstetrical nursing and has rendered the volume a splendid textbook by the addition of numerous drawings, diagrams and pictures. The practical instructions for the management of labor, the emphasis placed upon the hygiene of pregnancy, the absolute necessity of rigid technique at the time of delivery and during the puerperium, the simple treatment of the care of the new-born and complete discussions of the nurse's duties during obstetrical operations insures for the pupil a wholesome, safe and sufficient knowledge of the science of obstetrics.

Obstetrics Normal and Operative. By E. E. Shears, M.D., Professor of Obstetrics and Attending Obstetrician at the New York Polyclinic Medical School and Hospital; formerly Instructor in Obstetrics, Cornell University Medical College; Attending Obstetrician at the New York City Hospital; Senior Attending Obstetrician at the Misericordia Hospital. Illustrated. Second Revised Edition. Philadelphia and London: Lippincott, J. B., 1917. $6.00.

As a reference book for the general practitioner and the obstetrical specialist it ranks easily among the first. Throughout the entire work the practical needs of the physician, in an emergency, are conclusively treated and each phase of gestation and of the puerperium are presented in minutest detail, frequently, the more scientific, theoretical discussion being subordinated to the helpful, common sense, every-day obstetrical suggestion. In fact, the proverbial chapters on the physiology of reproduction, anatomy, embryology, placentation and historical data have been omitted. Especially noteworthy are the numerous illustrations that so ably supplement the literature. The entire normal and operative obstetrical science is carefully analyzed and the contribution is a valuable addition to medical literature.

Diseases of the Nervous System

A Text-Book of Neurology and Psychiatry. By Smith Ely Jelliffe, M.D., Ph.D., Adjunct Professor of Diseases of the Mind and Nervous System, N. Y. Post-Graduate Medical School and Hospital; and William A. White, M.D., Superintendent, St. Elizabeth's Hospital, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University; and Lecturer on Psychiatry, U. S. Army and U. S. Navy Medical Schools. Second Edition, Revised, Rewritten and Enlarged. 938 pages, illustrated with 424 engravings and 11 plates. Philadelphia and New York: Lea & Febiger, 1917. Cloth, $7.00.

These two well-known authors, whose fruitful pens have borne a rich harvest, include almost every subject neurological. This volume rather epitomizes all their former writings. The first edition appeared two years ago. Now we have the second edition, "revised, rewritten and enlarged." It is a treatise on the "whole nervous system," including (1) Vegetative, (2) Sensori-motor, and (3) Phychic—a rather gigantic undertaking for a single volume. The vegetative includes endocrinopathies; sensori-motor, organic neurology; and the phychic, of course, phyciatry. This seems an admirable method, and when the upper and lower levels are more fully understood, this treatise can become a more complete whole. At present, much still lingers in the speculative.

The authors are consistent in everywhere holding to psychoanalysis, and the Freud concept. The "old school" had just as well take notice of these concepts; for there is much in them that is here to stay. Like all new and radical teachings, there will likely be some changes made, when viewed and used by many practical workers.

The vegetative and phychic ideas are handled much more satisfactorily than are the chapters on the purely sensori-motor diseases. All of this is condensed into a single volume of nine hundred pages, in which clearness is too often sacrificed for brevity. In some occasional portions ambiguity shows haste in preparation. The print is good, the illustrations fair, and some of the plates really striking.

The book can be recommended to supplement one of our "older" standard text-books; but it would be a rather difficult work for ordinary students to use in learning diseases of "the whole nervous system."

Pulmonary Tuberculosis

A Hand-Book for Students. By Edward O. Otis, M.D., Professor of Pulmonary Diseases and Climatology, Tuft's College Medical School, Boston; Formerly Visiting and Consulting Physician, Massachusetts State Sanatorium (Rutland); Fellow and Former President, American Climatological and Clinical Association; Corresponding Member, International Tuberculosis Institute; Consulting Physician, Boston Dispensary, Tuberculosis Department, etc. 220 pages, with 16 full-page illustrations. Boston: W. M. Leonard, 1917. Cloth, $1.75.

This really delightful little volume is just what it sets out to be, as modestly stated in the preface: "It is primarily intended for students of the third and

fourth years, to be used in connection with clinical work. It is also hoped that the book may not be without value to the physicians who desire briefly to refresh themselves upon this ever-recurring disease."

Prof. Otis would seem to be a born teacher, as the entire subject is presented just as our real teachers speak to their classes. This is so rarely done in a book that it furnishes a real treat to the worker in internal medicine. The subject is fully, but not exhaustively, treated; yet so simple and easy is it in its style that one does not want to put it down until it has been read. Then, too, it is a handy little reference book which no one is likely to regret having purchased.

Blood and Uirne Chemistry

By R. B. H. Gradwohl, M.D., Director, Pasteur Institute of St. Louis; and Director, Gradwohl Biological Laboratory; and A. J. Blaivas, M.D., Assistant Director, Pasteur Institute; and Assistant Director Gradwohl Biological Laboratory, St. Louis, Mo. 240 pages, with 68 illustrations and 4 colored plates. St. Louis: C. V. Mosby Co., 1917. Cloth, $2.50.

Though a small book, it represents a condensation of the latest findings in blood and urine chemistry and their interpretation in clinical medicine. It attemnts to show that the facts obtained by the chemical analysis of the blood are far more important to the practitioner than is the most careful urinalysis. Every step in the laboratory technique has been not only clearly set forth, but simplified, thus adding practicability to its scientific value. We are more than pleased with this book.

The Principles and Practice of Dermatology

Designed for Students and Practitioners. By Wm. Allen Pusey, A.M., M.D., Professor of Dermatology, University of Illinois; Emeritus Dermatologist to St. Luke's and Augustana Hospitals, Chicago; Member American Dermatological Association. 1243 pages, with 54 plates and 466 text illustrations. Third Edition. New York and London: D. Appleton & Co., 1917.

Pellagra, syphilis, leukemia, and pseudo-leukemia cutis are all well described and deserve commendation. But many diseases alluded to in the author's preface—e. g., gonorheal eruptions, ulcus acuta vulvae, and espundia are of little value to the student on account of their meagre description and the absence of cuts.

This third edition, like the second, has very poor illustrations. There is little excuse in this day—when colored plates have become so perfected and so accurately depict skin lesions—for denying students the privilege of observing clear representations of the rare as well as the common skin diseases.

Cataract—Senile, Traumatic and Congenital

By W. A. Fisher, M.D., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College. Chicago: Published by Chicago Eye, Ear, Nose and Throat College, 1917. Price, $1.50 postpaid.

This monograph presents an interesting review of the history and evolution of cataract surgery, emphasizing the author's views and operative Methods. But we can hardly accept the modest claim that he has perfected "A modification of the Smith-Indian operation for cataract, making the removal of the lens in capsule safe and necessarily the operation of choice." However, we heartily agree with him when he says, "If I have acomplished this it will be a tremendous step forward, because the profession has been seeking for half a century for a safe method of removing a lens in capsule that is applicable as soon as the reduction in vision prevents the patient from attending to his ordinary duties."

Obstetrics for Students and Practitioners

By J. Whitridge Williams, Professor of Obstetrics, Johns Hopkins University; Obstetrician-in-Chief to Johns Hopkins Hospital. Fourth edition, illustrated. — pages. New York and London: D. Appleton & Co., 1917. Cloth, $6.00.

The fourth edition of this work very carefully and fully presents a most searching analysis of the many obstetrical problems and innovations that have been brought forward since the appearance of the third edition in 1912. Especially interesting and instructive are the chapters on placentation; the metabolism of pregnancy and the puerperium and the relation of syphilis to the generative process. The very timely admonition relative to the use of pituitrin, the definite resume of the status of the Abderhalden test and of "Twilight Sleep" and of other obstetrical anesthesias, the very frank expressions of the impracticability of elaborate and difficult laboratory methods for the general practitioner, the splendid diagrams of operative procedures and other equally important features, make this edition indispensable to the profession and a brilliant success to the author.

Obstetrics for Nurses

By Charles B. Reed, Obstetrician to Wesley Memorial Hospital, Chicago. Illutrated. — pages. St. Louis: C. V. Mosby Co., 1917

A manual of practical and useful hints to the nursing profession, dealing in a lucid manner with the more usual and common obstetrical nursing measures. Especially valuable, for didactic purposes, are the illustrations and the diagrammatic outlines as recapitulations of various chapters.

The Modern Milk Problem in Sanitation, Economics and Agriculture

Edited by J. Scott McNutt, Lecturer on Public Health Service, Mass. Institute of Technology; Author of a "Manual for Health Officers." New York: Macmillan Co., 1917. Cloth, $2.00.

The reviewer is most favorably impressed with the thorough and very competent manner in which this book handles the many phases of the milk problem so necessary to be solved in order to secure a safe and wholesome public milk supply.

In addition to containing a large score of valuable information as applied to the problems in securing pure milk, it is written in a logical manner and in an attractive style, calculated to commend itself readily to general readers who might wish to inform themselves concerning the many details and difficulties to be overcome in solving this vital problem of public health.

This book should also be of value to public health officials, milk inspectors, milk producers and dealers as well as to those charged with formulating, enacting and enforcing the laws intended to provide pure and wholesome public milk supplies, as it contains the latest thought in dairy sanitation and milk handling.

SOUTHERN MEDICAL NEWS

ALABAMA

Dr. S. W. Welch, State Health Officer, with Miss Mary Lent, New Orleans, La., and Miss Agnes Turner, Cambridge, Mass., were in Mobile during January in behalf of arousing interest in public health nursing.

At a meeting of the Madison County Medical Society held in Huntsville January 7 the following officers were elected: President, C. E. Blanton, New Market; Vice-President, H. H. Thomas, Huntsville; Secretary, Frank Jordan, Huntsville; Board of Censors, T. E. Dryer.

Dr. T. E. Dryer, Huntsville, has been appointed Assistant Health Officer of Madison County.

Deaths

Dr. W. H. Sanders, former State Health Officer, died at his home in Montgomery January 2.

ARKANSAS

Dr. M. T. Dozier, who has been stationed at Camp Pike, has been sent to North Little Rock to work with the local health authorities of the U.S.P.H.S.

State Health Officer C. W. Garrison reports that the smallpox contagion has not been entirely controlled and urges co-operation of the public in the vaccination crusade.

Health officials have reported the occurrence of a few cases of spinal meningitis at North Little Rock.

Dr. C. C. Pierce, U.S.P.H.S., at Little Rock, warns the State officials that there may be a general quarantine unless the smallpox cases are checked.

The Dover School Board refused to submit the schools to compulsory vaccination and it is reported that the whole of Pope County is organized against this measure.

At a recent meeting of the Benton County Medical Society, held in Little Rock, the following officers were elected: President, I. O. Green, Pea Ridge; Vice-President, A. J. Harrison, Lowell; Secretary-Treasurer, C. A. Rice, Rogers.

The following members have been appointed to the Board of Health in Fort Smith: Drs. J. A. Foltz, Eugene Stevenson, St. Cloud Cooper and W. R. Brooksher.

State Health Officer C. W. Garrison and Lieut. A. M. Jones, U.S.P.H.S., were in Truman during January for the purpose of investigating a smallpox epidemic at that place and to comply with the State compulsory vaccination laws.

Deaths

Dr. E. W. Hopson, Horatio, died at his home after a prolonged illness January 17.

Dr. A. E. Horn, Hot Springs, aged 76, died at his home January 4.

FLORIDA

The following physicians compose the Medical Advisory Board for District No. 4: Drs. P. T. Skaggs, C. F. Sayles, J. W. Brown and J. G. Dupuis.

Deaths

Dr. E. DeWitt, Apopka, died at his home December 6.

GEORGIA

The Colquitt County Medical Society held its annual meeting on January 4 in Moultrie for the purpose of electing officers for the ensuing year. The following officers were elected: President, W .W. Massey; Vice-President, J. H. Hall; Secretary-Treasurer, Everett Daniel; Censors, J. A. Summerlin, C. B. Harrell and C. B. Slocumb.

Deaths

Dr. J. D. Coleman, Henderson, aged 62, died at his home on December 13.

Dr. J. R. Brock, Trenton, aged 56, was killed at the Atlanta Federal Penitentiary December 27.

Dr. J. B. Peacock, Cochran, died at his home, following apoplexy, January 13.

Dr. R. E. Foster, Carrollton, died at Camp Gordon from pneumonia January 4.

Dr. J. I. M. Groover, Grooverville, aged 83, died at his home January 14.

KENTUCKY

At a meeting of the Woodford County Medical Society held during December the following officers were elected: President, W. E. Risque, Midway; Vice-President, W. T. Collette, Versailles; Secretary-Treasurer, S. A. Blackburn.

The Clark County Medical Society held a meeting in Winchester on December 28.

Dr. F. D. Reardon, Bowling Green, has been appointed City Health Officer and Local Surgeon of the L. and N. Railroad.

City Health Officer E. O. Witherspoon and City Chemist T. M. Dorsey, Louisville, have resigned their positions.

Dr. Edward Gant has been succeeded as City Health Officer of Louisville by Dr. Thomas H. Baker.

Dr. H. E. Tuley, Superintendent of the Louisville City Hospital, has reorganized the Social Service Department with Miss Mary Alexander in charge.

At the annual meeting of the McCracken County Medical Society the following officers were elected for the year: President, H. P. Linn, City Health Officer of Paducah; Vice-President, V. L. Powell; Secretary-Treasurer, H. P. Sights; Censor, J. Q. Taylor.

The Mason County Medical Society held its annual election of officers on January 18: President, L. H. Long; Vice-President, J. H. Hutchins; Secretary-Treasurer, G. L. Howard.

Dr. Arthur T. McCormack, Bowling Green, assumes his duties as Chief Health Officer of the Panama Canal Zone on February 1.

Deaths

Dr. J. E. L. Harbold, Louisville, aged 64, died at his home December 30th after a short illness from pneumonia.

Dr. W. E. Irwin, Owensboro, aged 60, died at his home December 28 from paralysis of the heart.

LOUISIANA

At a recent meeting of the Louisiana State Board of Medical Examiners there was a reorganization of the Board and the following officers were elected: President, Dr. L. J. Menville; Vice-President, Dr. T. E. Wright; Secretary-Treasurer, Dr. E. W. Mahler. At the same meeting it was voted to add Alabama to the ilst of states with which Louisiana would reciprocate.

State Health Officer Dowling was in Alexandria during January looking into the epidemic of spinal meningitis that has been reported to exist. He urges closest and rigid co-operation in stamping out the disease.

Dr. Chandler, President of the City Board of Health of Shreveport, has ordered an immediate and thorough survey of the city and vicinity.

Dr. F. C. Bennett, City Health Officer, has warned the citizens of Monroe of the danger of a smallpox epidemic.

On January 19 the Louisiana State Board of Health created a Bureau of Social Diseases, which is to investigate every phase of that evil and make a report to the Board. The following were appointed to serve on this Bureau: Every member of the State Board of Health, ex-officio; Dr. M. W. Swords, Chairman; Dr. J. H. Ellis, Dr. H. W. Walther, Dr. S. Y. Alexander, Shreveport; Dr. Solomon Wolfe, Dr. Hume Joseph, Dr. A. Nelken and Dr. Robin, of the City Board of Health.

Deaths

Dr. Chas. H. Burley, Monterey, died at Natchez, Miss., December 30.

MARYLAND

On January 8 the Maryland General Hospital opened its new wards and private rooms.

Dr. W. S. Thayer, M.R.C., has returned after four months in Russia, serving on a commission sent to that country by the American Red Cross.

Dr. C. P. Woodward, Baltimore, has succeeded Dr. A. H. Wood, Baltimore, as Secretary to the Health Department.

Dr. J. W. Magruder has resumed his duties as Secretary of the Federated Charities of Baltimore.

Deaths

Dr. Mary P. Fleming, Baltimore, aged 84, died at her home, following pneumonia, January 20.

Dr. Theodore Cook, Baltimore, was killed in an automobile accident January 13.

Dr. G. M. Litsinger, Baltimore, died at his home from blood poisoning on December 26.

Dr. C. F. Bevan, Baltimore, aged 67, died at his home following an operation for intestinal trouble.

Dr. C. W. Mitchell, Baltimore, died at his home from pneumonia on December 28.

MISSOURI

Dr. F. B. Tiffany, Kansas City, is confined to St. Luke's Hospital.

The Health Board of Kansas City reports an epidemic of measles and smallpox to be imminent in that City.

The following physicians were elected to the State Board of Health at a meeting held in St. Louis on January 9: President, Dr. W. J. Ferguson, Sedalia; Vice-President, Dr. W. A. Clark, Jefferson City; Secretary, Dr. George H. Jones, Kansas City.

New Frankfort has been put under quarantine on account of a mild smallpox epidemic.

Dr. J. C. Welch has been succeeded as Prison Physician by Dr. S. McNearney, Florissant.

At a meeting of the Jackson County Medical Society that was held in Kansas City on December 11 it dedicated its service flag, adding a gold star to the collection in honor of Dr. W. T. Fitzsimmons, the first American physician to lose his life in the military service of his country in the present war.

Dr. R. J. Terry, of the Washington University faculty, is convalescent after suffering a fracture of the patella.

(Continued on page 28)

GLYCEROPHOS COMP

No Sugar

We now have an abundant supply of this prime favorite among the most particular prescribers and dispensers.

For a time we could not get any of the **super-quality calcium glycerophosphate** without which no preparation of these salts will keep well; and we would not use an inferior grade of calcium glycerophos, hence had no alternative but to temporarily withdraw this product from the market. **But now we have an abundant supply** and are shipping large quantities out to the drug trade. Please ask your druggist if he has received his new stock.

SHARP & DOHME

QUALITY GLYCEROPHOS. COMP.

A TRUE LINE

In the present uncertain state of the drug market, with the demand for many items far exceeding the supply, the market is being flooded with crude drugs and chemicals of inferior quality, many of which are being offered at very favorable prices.

For the protection of American Physicians, crudes and chemicals entering into the manufacture of P-M Co. Pharmaceuticals, are secured from reliable sources ONLY and are subjected to the closest scrutiny by our chemists. Constant analyses and assays protect you, Doctor, against untrustworthy ingredients when you use the pharmaceuticals of

A TRUE LINE

PITMAN-MOORE COMPANY

PHARMACEUTICAL & BIOLOGICAL CHEMISTS

INDIANAPOLIS

Patronize our advertisers—mention the Journal when you write them.

Capt. J. G. Hayden, M.R.C., Kansas City, is convalescent from a serious attack of pneumonia.

Dr. E. H. Skinner, Kansas City, has associated with him in his X-ray work Dr. C. W. Swope, Wichita, Kansas.

Capt. R. E. Schlueter, President of the Missouri State Medical Association, has reported to Fort Oglethorpe for active duty.

Dr. Philip A. Shaffer, Dean of the Washington University Medical School, has been commissioned a Major in the M.R.C. and will leave for France, where he will have charge of the Food Division of General Pershing's army.

Deaths

Dr. B. A. Watson, Columbia, died at his home on January 19.

Dr. R. C. Atkinson, St. Louis, aged 76, died at his home from nervous prostration December 31.

Dr. G. E. Whittlesey, St. Louis, committed suicide in his offices December 27.

MISSISSIPPI

The quarterly meeting of the Washington County Medical Society was held in Greenville on January 3, at which time the following officers were elected: President, Dr. Baldwyn, Lamont; Vice-President, Dr. T. B. Lewis, Greenville; Secretary, Dr. J. J. Ferguson, Greenville.

The United States Board of Health has arrived in Meridian for the purpose of placing that City and Lauderdale County in a good health condition.

The officers elected to the State Board of Health at its annual meeting held in Jackson during January were: President, Dr. C. D. Mitchells, Pontotoc; Vice-Presidents, Drs. F. J. Underwood, Nettleton; W. H. S. Frizell, Brookhaven, and George Baskerville, Winona; Secretary, Dr. W. S. Leathers, University.

NORTH CAROLINA

Dr. Lester Ransom, Lower Steel Creek, has begun a practice in Charlotte.

Dr. L. J. Smith has been sent to Wilson County to succeed Dr. J. C. Braswell, Jr., resigned to enter the M.R.C., as County Health Officer, and Dr. Smith has been succeeded as Health Officer of Rowan County by Dr. Andrew J. Warren, Hillsboro.

Dr. J. R. Alexander, Charlotte, sustained painful injuries when his automobile was run into by a motor truck.

On January 3 the Guilford County Medical Society held a meeting at Greensboro for the purpose of electing officers: President, M. S. Miles; Vice-President, Edmund Harrison; Secretary-Treasurer, R. A. Schoonover, all of Greensboro.

Dr. T. P. Whaley, Charleston, is recovering from burns received when his bathrobe caught on fire at his home on December 28.

The Newberry County Medical Society held its meeting on December 14 at Newberry and the following officers were elected: President, T. H. Pope, Kinards; Vice-President, William Dunn, Newberry; Secretary-Treasurer, John B. Setzler, Newberry.

The 128th annual meeting of the Charleston Medical Society was held at the Roper Hospital December 10 and the following officers were elected: President, R. S. Cathcart, and Vice-President, John M. Green.

Dr. J. W. Long, Greensboro, is interested in organizing a base hospital from the State.

Dr. A. T. Pritchard Asheville, has been commissioned a Captain in the M.R.C.

Deaths

Dr. J. W. Bradfield, Charlotte, died at his home from pneumonia on January 4.

OKLAHOMA

Dr. Amos Avery, Sapulpa, has been appointed as Chairman of the Medical Advisory Board of District No. 32.

At a recent meeting of the Pottawatomie County Medical Association the annual election of officers was held. Dr. R. M. Anderson was elected President and Dr. G. S. Baxter was re-elected Secretary-Treasurer.

The City Commissioners of Muskogee have appointed Dr. H. T. Ballantine the City Superintendent of Health and Dr. H. A. Scott, City Physician.

The following physicians compose the Medical Advisory Board of the district composed of Kingfisher and Canadian counties: J. Hatchett, Chairman; Phil Herod, Secretary; T. M. Aderhold, W. J. Muzzy, Thomas Lane, W. B. Catto, A. O. Cromer, W. P. Morrison, all of El Reno; and C. W. Fisk, Kingfisher.

Deaths

Dr. J. S. Nicholson, Clinton, died at Tulsa on December 26.

SOUTH CAROLINA

The Spartanburg Medical Society held its meeting on December 27, at which time election of officers for the coming year were elected as follows: President, Martin Crook; Vice-President, D. R. Norman; Secretary, J. E. Edwards; and Treasurer, W. P. Lancaster.

Dr. Joseph Boten, U.S.P.H.S., has been in Spartanburg investigating the report of a few cases of meningitis said to be present in that City.

Deaths

Dr. T. P. Whaley, Charleston, died from burns received on December 28, aged 46, January 14.

Dr. C. C. Jones, Greenville, aged 57, died at his home on January 6.

Dr. R. L. Moore, Columbia, died at his home during January.

TENNESSEE

The Baird-Dulaney Hospital at Dyersburg has recently purchased valuable property which is to be used for an annex to the hospital. It will be ready for occupancy by June 1, and will give the hospital a capacity of 75 beds.

TEXAS

The Bowie County Medical Society held a meeting on December 28, at which time the following officers were elected: President, Dr. Helms, New Boston; Vice-Presidents, Dr. Preston Hunt, Texarkana, and Dr. J. N. White, Texarkana; Secretary-Treasurer, Dr. Nettie Klein, Texarkana.

At the annual election of the Dallas County Medical Society, which was held in Dallas on December 27, the following officers were chosen: President, J. T. Watson; Vice-President, Minnie Masset; Secretary-Treasurer, R. S. Loving.

Dr. Joe Davis, formerly of the U.S.P.H.S., has resigned his position to become Field Director of the State Board of Health.

A meeting of the State Board of Health was held in Temple during January.

Deaths

Dr. John W. Davis, Corsicana, aged 53, died at his home December 29.

Dr. J. Maurice Brown, San Antonio, died at the Touro Hospital, New Orleans, following an operation, on December 31.

VIRGINIA

Dr. W. D. Macon has been succeeded as City Health Officer of Charlottesville by Dr. R. Lindsay Robertson.

Dr. J. M. Howard has begun the practice of medicine in Petersburg.

Dr. George M. Converse, U.S.P.H.S., is still making a thorough sanitary survey of Portsmouth and Norfolk County.

It was reported several months ago that there was a shortage of doctors in 37 cities. The State Board of Health has advised that this is an error; that there is no shortage in cities and towns; the shortage is only in sparsely settled rural sections.

WEST VIRGINIA

At a meeting of the Little Kanawha and Ohio Valley Medical Society, held in Parkersburg on January 4, the following officers were elected: President, R. L. Brown; Vice-Presidents, C. L. Muhleman, C. E. Grimm, St. Marys; P. W. McClung, Elizabeth; Secretary, H. A. Giltner; Treasurer, S. H. D. Wise; Councillors, Drs. R. Camden, W. B. Richardson, R. B. Miller, E. S. Goff, W. S. Dearmond.

Dr. E. B. Stephenson, President of the State Board of Control, is convalescent following an attack of la grippe.

Deaths

Dr. John B. Wilcox, Charleston, died at his home during December.

In the Treatment of

RHEUMATIC and NEURALGIC ILLS

you will obtain substantial aid from the thorough use of

K-Y ANALGESIC

This non-greasy, water-soluble local anodyne will enable you to ease your patient's pain and discomfort, while your internal or systemic medication is combating the cause of his condition.

The advantages, moreover, of relieving the pain of a facial neuralgia, an inflamed joint, or aching lumbar muscles without recourse to coal tar derivatives cannot fail to appeal to medical men.

K-Y ANALGESIC is a safe and effective adjunct that will daily grow more useful to the practitioner as the many opportunities for its effective use are realized.

VAN HORN AND SAWTELL

NEW YORK CITY, U. S. A.
15 and 17 East 40th Street

and

LONDON, ENGLAND
31 and 33 High Holborn

So many cases of

Pruritus, Chafings, and Irritations

are relieved by applying

K-Y Lubricating Jelly

that we feel we owe it to our patrons to direct their attention to the usefulness of this product as a local application, *as well as* for surgical lubrication.

No claim is made that K-Y Lubricating Jelly will act with equal efficiency in every case; but you will secure such excellent results in the majority of instances that we believe you will continue its use as a matter of course.

NO GREASE TO SOIL THE CLOTHING!

Collapsible tubes, 25c. Samples on request.

VAN HORN AND SAWTELL
15-17 East 40th Street, New York City

STRAINING AT STOOL

with its essential dangers, can be greatly reduced and often entirely prevented by the judicious use of

INTEROL

By softening the intestinal contents, and lubricating the passage, the fecal mass readily passes along the colon to the rectum and is easily evacuated.

To the sufferer from hemorrhoids or fissures, INTEROL is of great comfort, because it keeps the fecal mass soft and plastic, and thus allows it to be passed, easily and painlessly, without local congestion.

Sig—℥ ss. morning and night on an empty stomach, the dose to be reduced or increased under the physician's directions, as the effects are produced.

Pint bottles, druggists. INTEROL booklet on request; also literature on "Straining at Stool"

VAN HORN AND SAWTELL
15 and 17 East 40th Street, New York City

DR. HERMAN SPITZ

Bacteriological and Pathological Laboratories

319-21-23 Doctors' Building
NASHVILLE, - - - TENNESSEE

Strictly ethical laboratories established for the use of physicians desiring careful work. Personal attention given to all specimens.

Pathology, Bacteriology, Clinical Microscopy, Serology, Water, Milk and Food Analyses. Correspondence invited.

WARNING! This year YOU must pay an Income Tax

Don't feel that the new income tax does not apply to you—you may be pretty sure it does.

Single persons with incomes of $83.33 or more a month ($1,000.00 or more a year) and married persons with incomes of $166.66 or more a month ($2,000.00 a year) must file a statement of this income with the Government. It is only the income above $1000 and $2000 which is taxed.

This statement must be filed on a form which the Internal Revenue Representative in your community has. To locate him, ask your employer, the Postmaster, or any Banker.

Get the necessary form at once. Your statement must be filed before March first and you must not neglect it—for two reasons:

First: it is your patriotic duty in helping win the war.

Second: there are severe penalties to be visited upon you if you do.

This announcement is published by Southern Medical Journal to help the Government collect these taxes —and thus aid in winning the war.

Maternity and Hospital Belt

BOLEN SUPPORTER

(PATENTED)

Creating Correct Abdominal Supporters is a Science

We have mastered its principles and apply them successfuly in constructing *Supporters and Belts* for such conditions as

Pendulous Abdomen, Obesity, Enteroptosis, Floating Kidney, Pelvic Inflammation and Relaxation of Pelvic Ligaments, Sacro-illiac, Relaxation, Hernia, Etc.

Enteroptosis Belt

Eminent physicians and surgeons endorse our methods and our products. Their names with names of satisfied wearers, furnished on request.

Mail orders executed, with perfect fitting guarantee

BOLEN MANUFACTURING COMPANY
213 Baird Building **OMAHA, NEBRASKA**

A Satisfactory FOOD

should first be easily digested—then easily prepared—clean—safe and wholesome. All the above factors must be considered if the food is to enjoy the confidence of the medical profession.

Borden's Eagle Brand for nearly sixty years has enjoyed this confidence, which is reflected in the consistently reliable quality of the product.

Samples, Analysis and Literature will be mailed upon receipt of professional card.

BORDEN'S CONDENSED MILK CO.
Est. 1857 NEW YORK

Not All Bran
But Effective

Our doctor friends, some years ago, asked us to make a bran dainty.

They wanted a food which was staple and likable—a food to be continued.

They wanted the bran in flake form, to have maximum efficiency.

We made Pettijohn's for them—25 per cent bran flakes, hidden in soft rolled wheat. Now people are serving—largely by doctors' advice—nearly a million dishes weekly.

You will prefer Pettijohn's, we think, to any clear bran food when you know it. And so will those to whom you recommend it.

Pettijohn's

Rolled Wheat with Bran Flakes

Soft, flavory wheat rolled into luscious flakes, hiding 25 per cent of unground bran. A famous breakfast dainty.

Pettijohn's Flour is 75 per cent fine patent flour mixed with 25 per cent tender bran flakes. To be used like Graham flour in any recipe; but better, because the bran is unground.

The Quaker Oats Company

Chicago

(1753)

MULFORD
FOR THE CONSERVATION OF LIFE
LABORATORIES

Serum Treatment of Lobar Pneumonia

Antipneumococcic Serum Polyvalent

Antipneumococcic Serum Polyvalent Mulford, is prepared by injecting horses with Types I, II and III of pneumococci and contains antibodies against these three types.

Antipneumococcic Serum Polyvalent Mulford, is standardized by animal protective tests against Type I. Pneumonia caused by this type has proven most amenable to serum treatment. One mil of the serum must protect against 500,000 fatal doses of Type I Culture. Possessing, as it does, the same protective power against Type I and also antibodies for Types II and III, **it is therefore the logical serum to use.**

Type diagnosis is desirable, but is rarely practicable. It is, therefore, good routine practice not to wait for determination of type, but administer Polyvalent Antipneumococcic Serum at once and save valuable time that may be lost in determining type of infection.

During the time the U. S. troops were stationed along the Mexican border, Antipneumococcic Serum Polyvalent was used extensively and is now being employed with excellent results in the U. S. Army and Navy Service.

Antipneumococcic Serum Type I

When type determinations are made and Antipneumococcic Serum Type I is indicated, we are prepared to furnish this serum accurately standardized and tested,—1 mil of serum protecting a mouse against 500,000 fatal doses of pneumococcus Type I cultures.

It should always be recognized, however, that Antipneumococcic Serum Polyvalent Mulford, has the same protective value against Type I infections as Type I Serum, and Polyvalent Serum may always be used in Type I infection.

Dosage.—The best results are obtained by administering from 50 to 100 mils (c.c.) **intravenously,** repeated every six to eight hours until the patient successfully passes the crisis. Most cases will require 200 mils (c.c.) or more. When injected intramuscularly, the results are slower and less effective.

Antipneumococcic Serums Mulford are furnished in ampuls of 50 mils (c.c.) for intravenous injection.

Specific Agglutinating Pneumococcic Serums Mulford for laboratory diagnosis are furnished for each of the three types, in 10-mil (c.c.) ampuls sufficient for about 20 tests.

For Preventive Inoculation

Pneumo-Serobacterin Mixed Mulford is an efficient prophylactic against lobar pneumonia. It is supplied in packages of four graduated syringes, A, B, C, D strength, and in syringes of D strength separately. Syringe A contains 250 million; Syringe B, 500 million; Syringe C, 1000 million; Syringe D, 2000 million killed sensitized bacteria.

H. K. MULFORD CO., Philadelphia, U. S. A.

Manufacturing and Biological Chemists 32501

Literature sent on request with full laboratory tests

SOMETHING

EVERY SURGEON NEEDS

CELLOSILK

The Modern Surgical Dressing

A thin, flexible, transparent, waterproof, hygienic material that can be sterilized by boiling—can be applied direct over open wounds to prevent bandages from sticking and tearing the new granulations—allows quick, painless examination—used with wet dressings, as a substitute for oiled silk, rubber tissue, etc—suitable for making drain tubes as it can be removed without trouble—try it over skin grafts—furnished in sheets 18x36 inches, or in rolls 12 feet long, as wide as desired.

Send for free sample and prices.

Headquarters for X-Ray Supplies

Barium Sulphate for abdominal diagnosis. Highest grade. Low in price.

Dental X-Ray Films, fast or slow emulsion. Regular or oval shapes.

X-Ray Paper for charity work or for record purposes, or colon examinations, etc.

PARAGON X-RAY PLATES

Developers, in tin cans, 5 size—10 oz. to 2 gal.

Filing Envelopes for used X-Ray Plates.

Acid Hypo fixing bath—2 sizes.

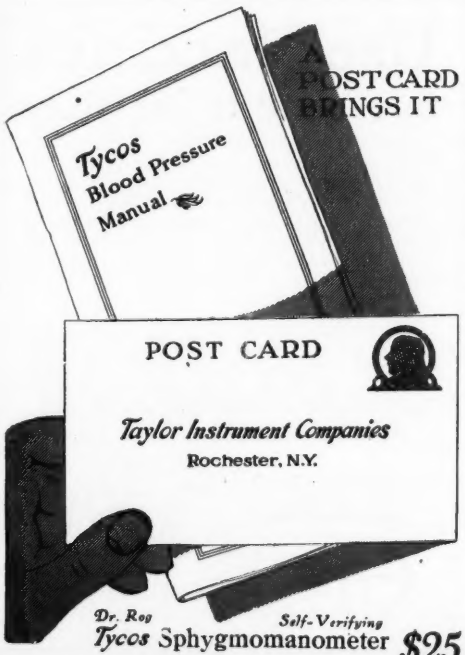
Developing Tanks, 6 or 4 compartments in stone—3 sizes steel enamelled.

Developing Trays, 4x5 to 14x17 inches.

Send for complete price list.

GEO. W. BRADY & CO.,

780 S. Western Ave. CHICAGO



Dr. Roy *Self-Verifying*
Tycos Sphygmomanometer **$25**

550 Degrees

For One Hour Then Exploded

Grains are dextrinized by 400 degrees of heat.

Puffed Grains are subjected, for 60 minutes, to 550 degrees of heat.

Then they are steam-exploded.

The trifle of moisture in each food cell expands and bursts the cell. More than 100 million of these explosions occur in every kernel.

The result is easily digested grain food. In Puffed Wheat and Puffed Rice it is whole-grain food.

The grains are puffed to bubbles, eight times normal size. They are thin and flimsy. The toasting gives a very nut-like taste.

The inventor is Prof. A. P. Anderson, formerly of Columbia University.

In many cases, we believe, these foods will best meet your requirements.

The Quaker Oats Company

Chicago (1751)

Puffed Wheat **Puffed Rice**

and Corn Puffs

All Steam-Exploded

"KELENE"

PURE CHLORIDE OF ETHYL

FOR LOCAL AND GENERAL

ANAESTHESIA

MANUFACTURERS:

FRIES BROS.

92 READ ST. NEW YORK

SOLE DISTRIBUTORS FOR THE UNITED STATES

MERCK & CO.

NEW YORK RAHWAY, N. J. ST. LOUIS

Literature Sent Upon Request

THE STORM BINDER AND ABDOMINAL SUPPORTER

(Patented)

No Leather, No Whalebones, No Rubber Elastics. Washable as Underwear

ADAPTED TO USE OF MEN, WOMEN, CHILDREN AND BABIES

For Hernia, Relaxed Sacroiliac Articulations, Floating Kidney, Low and High Operations, Ptosis Pregnancy, Pertussis, Obesity, Etc.

Send for new folder and testimonials of physicians. General mail orders filled at Philadelphia only—within twenty-four hours

Katherine L. Storm, M. D. 1541 Diamond Street PHILADELPHIA

Use Vaccines

in Acute Infections

The early administration of Sherman's Bacterial Vaccines will reduce the average course of acute infections like Pneumonia, Broncho-pneumonia, Sepsis, Erysipelas, Mastoiditis, Rheumatic Fever, Colds, Bronchitis, etc., to less than one-third the usual course of such infectious diseases, with a proportionate reduction of the mortality rate.

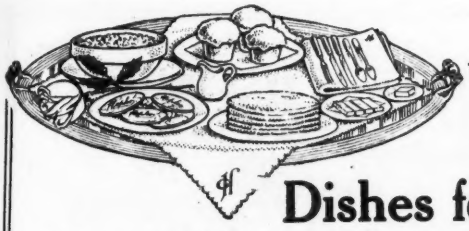
Sherman's Bacterial Vaccines are prepared in our specially constructed Laboratories, devoted exclusively to the manufacture of these preparations and are marketed in standardized suspensions.

Write for literature.

MANUFACTURER OF BACTERIAL VACCINES

G. H. SHERMAN, M. D.

Detroit, Mich. U.S.A.



Delicious Dishes for Diabetics

Satisfying in Variety and Correct in Composition Can be Prepared With

HEPCO FLOUR

Is your diabetic patient tired of his restricted diet? Prescribe Hepco, the Original Soya Bean Flour, Hydro Process, and to the dietary can be added

Hepco Gems
Hepco Cakes
Hepco Dodgers
Hepco Bread
Hepco Hermits
Hepco Muffins

and other appetizing, properly balanced foods. Recipes furnished with every package.

PALATABILITY

Hepco is very palatable. The foods made from it are oftimes preferred to the commonly called wheat breads, even after the patient has recuperated sufficiently to assimilate quantities of carbohydrates.

ECONOMICAL

A $4.00 can of Hepco will feed one person eight weeks—costing only 50 cents per week.

A FREE SAMPLE

of Hepco Flour will be gladly furnished to any physician making request.

Even if you have no diabetic cases at present, a trial of Hepco personally will show you its possibilities. Ask for samples and analysis.

Waukesha Health Products Co. 313 GRAND AVE., WAUKESHA, WIS.

TEMPERED GOLD Hypodermic Needles

possess the rigidity of steel without its brittleness or tendency to break.

A Distinct Advance in Hypodermic Asepsis

Rust-proof, germ-proof, acid-proof. Can not corrode under any conditions, climatic or otherwise. Durability practically unlimited. Sterilizable by all usual methods without injury.
One needle used for over 7,000 mercurial injections is still in perfect condition. An obvious economy.

If not obtainable of your dealer, we will send you a sample needle for $1.00, or a half dozen assorted sizes, up to one inch, for $4.50, post-paid.

Precious Metals Tempering Co.
WHITESTONE, L. I., N. Y.

Medication for Hypodermic Treatment

Sterile, Accurate, Efficient. In Hypule Form

Sodium Cacodylate, Mercury Biniodide, Mercury Salicylate, Iron Citrate, Iron Citrate and Sodium Arsenate, Emetine Hydrochloride, Fisher's Solution (concentrated), Gray Oil, Novocain and 80 other formulae.

These hypules not only insure full potency and exact dosage of the drug to be administered, but they afford the physician an aseptic, and readily assimilated solution or suspension. For treatment in serious and malignant diseases, hypodermic medication is far superior to the indirect methods of absorption through the alimentary tract. The use of **HEISTER'S HYPULES** places this form of medication on a scientific basis, relieving the practitioner of all anxiety as to the quantity or character of the hypodermic injection which he administers.

From the Laboratory of

LOUIS HEISTER

Manufacturers of Physician's Pharmaceutica Specialties in Hypule Form

List on pplication CINCNNATI, OHIO, U. S. A.

Patronize our advertisers—mention the Journal when you write them.

CLASSIFIED ADVERTISEMENTS

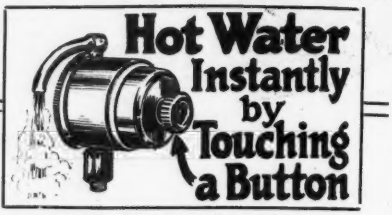
GUINEA PIGS—We supply healthy, country-grown stock, by contract or lots, for experimental purposes. M. G. Wood & Son, Frankville, Ala.

WANTED—X-ray apparatus, interrupterless type, for small hospital. State price and full particulars. Address B. H. H., care Southern Medical Journal.

WANTED—Capable salesmen to sell to the medical profession a standard and nationally advertised line of pharmaceuticals. Liberal commission. Western Chemical Co., Inc., Hutchinson, Minn.

WASSERMANN TEST
For Syphilis, $5.00
COMPLEMENT FIXATION TESTS
For Gonorrhea, $5.00
Our laboratory has complete, modern equipment for making the above and all other laboratory examinations. Our location, prompt work and reliable reports meet the demand of the careful physician for SERVICE.
Prices for Autogenous Vaccines and other laboratory work furnished upon request.
C. W. GOULD, A.M., M.D., Manager
ATLANTA CLINICAL LABORATORY
Candler Building
ATLANTA, GEORGIA.

Get Your Hot Water Instantly, as You Get Your Ligh



Price Only $10 Express Prepaid, Guaranteed

THERMO ELECTRIC FAUCET. A beautiful nickel-plated brass fixture, lined with porcelain; artistic and ornamental in appearance, weighing less than 2 pounds. It is easily attached to any plumbing and takes its electricity from any light socket or other outlet.
THERMO ELECTRIC FAUCET CO.,
72-78 New Montgomery St. San Francisco

HIGH POWER
Electric Centrifuges
Send for Cat. Cn.
INTERNATIONAL EQUIPMENT CO.
532 WESTERN AVE. BOSTON, MASS

Look for the RED HEART on the bottle label—no RED HEART, it's not Stafford

STAFFORD WATER

The BO-GA-HA-MA (Water of Life) of the Indians

DIURETIC
DILUENT
APERIENT
HEMATIC

Dr. Henry Froehling, of Froehling & Robertson, Chemists, Richmond, Va., on October 30, 1914, collected in person water from Stafford Springs from which to make an exhaustive test. A complete report has just been made on the water—a report that justifies all the claims made of Stafford Water by its many friends.

Dr. Froehling in his report comments as follows:

"It has been shown that Radio Emmanations are very effective in Gout, Rheumatism, Sclerosis of the Arteries, and that the use of Radio Active water either by drinking or bathing, have a strong tendency to increase the activity of the kidneys and bladder. This has perhaps been no uncertain factor in producing the many cures of Nephritis and other kidney troubles credited to the Stafford Mineral Water.

Stafford shipped in any quantity—handled by all druggists
We have excellent hotel accommodations at reasonable rates

STAFFORD MINERAL SPRINGS AND HOTEL CO., LTD.
Operated by COLBURN, MORGAN COMPANY
VOSSBURG, MISS.

Look for the RED HEART for genuine Stafford Water Write for booklet and analysis

Patronize our advertisers—mention the Journal when you write them.

AMERICAN-MADE SALVARSAN

(DIOXYDIAMINOARSENOBENZENE DIHYDROCHLORIDE)— (EHRLICH'S "606")

Salvarsan is now being made in the H. A. Metz Laboratories under the supervision of Dr. G. P. Metz, who was instructed in the processes of manufacture at Hoechst, Germany. Salvarsan is being manufactured under license from the Federal Trade Commission, corresponds in every detail to the standards set by the late Professor Dr. Paul Ehrlich, and is the only product made by the processes used at the Hoechst works.

As is well known, the slightest irregularity during the process of making Salvarsan may cause the formation in it of toxic by-products. In order to protect the public and ourselves against the effects of any accidental irregularities in manufacture, we ascertain toxicologically whether or not each lot of Salvarsan prepared by us is free from toxic by-products. These tests are in addition to those prescribed by the United States Public Health Service and are made by the head of the Department of Biological Chemistry in one of our leading university medical schools, who bears the same judicial attitude to our preparations that Prof. Paul Ehrlich did to the standard German preparations, and who subjects them to biological tests that he considers more rigorous and comprehensive than those adopted for this purpose by Prof. Ehrlich himself. They are made and reported upon before the product is submitted to the United States Public Health Service for its tests, thus insuring a double and absolute check on every lot of Salvarsan turned out.

We do not market Salvarsan until after it has been so tested and reported upon as meeting all the standards set.

We shall continue to deliver Salvarsan direct to the medical profession for the time being. Our output has now reached the stage where we can make deliveries outside the United States Government orders. The price to physicians will be $1.75 per ampule, 0.6 gram, in packages less than 10 ampules, with proportionately lower prices for the smaller sizes, and in containers of 10 ampules, $1.50 per ampule.

To hospitals and dispensaries for clinical and charity use, the price will be $1.25 per ampule, 0.6 gram, in 50 and 100 ampule containers. The price to the United States for Army, Navy and Red Cross purposes will be $1.00 per ampule, 0.6 gram.

FARBWERKE-HOECHST COMPANY

Pharmaceutical Dept. 111-113 Hudson Street

NEW YORK

A MESSAGE TO YOU

My Dear Doctor:—

Some time soon you will come to New York and I want to assure you of a cordial welcome at the **HERALD SQUARE HOTEL.** Professional men consider this their headquarters and you will be sure to meet many of your friends here. Our location is ideal—**34th St., just west of Broadway** and the service all that any one could ask. Rates—**$1.50 per day** and up.

Won't you pay us a visit?

J. FRED SAYERS,
Managing Director.

50% BETTER

Prevention Defense Indemnity

1. All claims or suits for alleged civil malpractice, error or mistake, for which our contract holder,
2. Or his estate is sued, whether the act or omission was his own,
3. Or that of any other person (not necessarily an assistant or agent),
4. All such claims arising in suits involving the collection of professional fees,
5. All claims arising in autopsies, inquests and in the prescribing and handling of drugs and medicines.
6. Defense through the court of last resort and until all legal remedies are exhausted
7. Without limit as to amount expended.
8. You have a voice in the selection of local counsel.
9. If we lose, we pay to amount specified in addition to the unlimited defense.
10. The only contract containing all the above features and which is protection per se.

A sample upon request

THE MEDICAL PROTECTIVE CO.
of FT. WAYNE, IND.
Professional Protection Exclusively

Bayer-Tablets
AND
Bayer-Capsules
OF
ASPIRIN

(5 grs. each)

CONTAIN THE ORIGINAL PRODUCT

Made in the United States since 1904

The trademark "Aspirin" (Reg. U. S. Pat. Office) is a guarantee that the monoaceticacidester of salicylicacid in these tablets and capsules is of the reliable Bayer manufacture.

HIGH FREQUENCY THERAPY

has numerous indications in every branch of medicine.

One Model of Victor High Frequency Coil

HERE IS A SYNOPSIS OF SOME OF THE CONSTITUTIONAL EFFECTS:

1. *Increases general metabolism.*
2. *Increases glandular activity.*
3. *Increases bodily heat.*
4. *Increases secretions.*
5. *Increases elimination.*
6. *Lowers blood pressure where high pressure exists.*
7. *Soothing to the nervous system.*

¶VICTOR HIGH FREQUENCY APPARATUS is manufactured in a variety of models—as regards capacity, type and price.
The quality and durability is uniformly high in all instances.

Catalog literature and clinical data will be gladly sent on request—and without obligation.

VICTOR ELECTRIC CORPORATION

CHICAGO
236 S. Robey St.

CAMBRIDGE, MASS.
66 Broadway

NEW YORK
131 E. 23rd St.

Territorial Sales Distributors:

PHILADELPHIA
M. H. Bresette Co.
25 S. 17th St.

PITTSBURGH
V. L. Stiner
620 Fulton Bldg.

MILWAUKEE
John McIntosh Co.
Merchants & Mfr's Bldg.

CHICAGO
Victor Electric Corporation
236 S. Robey St.
John McIntosh Co.
30 E. Randolph St.

OMAHA
Magnuson X-Ray Co.
Brandeis Theatre Bldg.

ST. LOUIS
John McIntosh Co.
4485 Olive St.

NEW ORLEANS
M. C. Olson
Maison Blanche Bldg.

DALLAS
M. C. Olson and
Frederick Johnson
411 Juanita Bldg.

SAN FRANCISCO
Bush Electric Corporation
334 Sutter St.

LOS ANGELES
Bush Electric Corporation
Baker-Detwiler Bldg.

CLEVELAND
Victor Electric Corporation
Frederick Bldg.

MINNEAPOLIS
F. L. Penßelly
2875 Irving Ave. South

DES MOINES
Lewis X-Ray Co.
Utica Bldg.

ATLANTA
J. G. Baldwin
Peters Bldg.

KY. and TENN.
W. D. Tatman
236 S. Robey St.
Chicago

DENVER
Magnuson X-Ray Co.
1415 Glenarm St.

WINNIPEG
Chandler & Fisher, Ltd.
Keewayden Bldg.

BUFFALO, N. Y.
Jeffrey-Fell Co.
318 Pearl St.

ROCHESTER, N. Y.
R. R. Taylor
840 Genesee St.

DETROIT
Dr. Joseph Foster
Hotel Tuller

KANSAS CITY
W. A. Rosenthal
414 E. 10th St.

FORT WAYNE
Victor Electric Corporation
1333 Calhoun St.

SEATTLE
G. W. Nelson & Co.
Cobb Bldg.

PORTLAND, ORE.
G. W. Nelson & Co.
Pittock Bldg.

VANCOUVER
Chandler & Fisher, Ltd.
808 Richards St.

Chloretone produces natural sleep

In the treatment of insomnia—whether superinduced by pain, mental strain or nervous disease—the administration of a reliable hypnotic is a logical procedure.

But what is a "reliable hypnotic"? This question is worthy of serious consideration.

Briefly, an ideal hypnotic induces peaceful slumber. Its action, in this respect, is like that of ordinary fatigue. It causes no cardiac disturbance or other untoward condition.

CHLORETONE meets the specification squarely. Administered internally, it passes unchanged into the circulation, inducing (in efficient therapeutic doses) profound hypnosis. It does not depress the heart or respiratory centers. It does not disturb the digestion. It is not habit-forming.

CHLORETONE, in a word, *produces natural sleep.*

◆ ◆ ◆

In addition to its primary function as a hypnotic, **CHLORETONE** has a wide range of therapeutic applicability as a sedative. It is useful in alcoholism, delirium tremens, cholera, colic; epilepsy, chorea, pertussis, tetanus and other spasmodic affections; nausea of pregnancy, gastric ulcer and seasickness; mania (acute, puerperal and periodic), senile dementia, agitated melancholia, motor excitement of general paresis.

CHLORETONE: Ounce vials.
CHLORETONE CAPSULES: 3-grain, bottles of 100 and 500.
CHLORETONE CAPSULES: 5-grain, bottles of 100 and 500.
Dose, 3 to 15 grains.

SEE THAT YOUR DRUGGIST IS ABLE TO SUPPLY YOU.

Home Offices and Laboratories,
Detroit, Michigan.

Parke, Davis & Co.

XU